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Henry Dryers, Strainers and Large Valves today hold the position of undisputed leadership in refrigeration and air conditioning. Their progress has been marked by a steady, consistent growth in customer appreciation . . . Service men, contractors, manufacturers and jobbers have found through actual experience that Henry Leadership carries with it the assurance of sounder engineering, design that more aptly meets the various conditions encountered in field service and value which is measured, not only in first cost, but also in greater convenience and longer life . . . To those who now use Henry Products, we pledge a continuation of those same policies which have made our growth so sound. . . . To those concerns who have not as yet standardized on Henry, we invite a careful comparison with competitive products, confident that their good judgement will result in their joining our ever growing circle of satisfied customers.

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Chicago, Ill.	Airo Supply Co.	New York, N. Y.	Harry Alter Co.
Chicago, Ill.	Harry Alter Co.	New York, N. Y.	Federal Refrigerator Corp.
Chicago, Ill.	Auto. Heating & Cooling Supply Co.	New York, N. Y.	Paramount Electrical Supply Co.
Chicago, Ill.	H. W. Blythe Co.	New York, N. Y.	Servicemen Supply Co.
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Chicago, Ill.	Fred C. Kramer Co.	Pittsburgh, Pa.	William M. Orr Co.
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Cincinnati, Ohio	The Merkel Bros. Co.	Portland, Ore.	Jerry Dimick Co.
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Houston, Texas	Walter Refrigeration Supply Co.	Syracuse, N. Y.	Syracuse Equipment Co.
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REFRIGERATION NEWS

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A.S.R.E. Hears of Refrigeration For Farm Work

Speakers Tell of Needs at Sources of Food Supply; Test Codes Proposed

By Phil B. Redeker
FRENCH LICK, Ind.—The application of modern means of refrigeration at the sources of raw food-stuffs was the major theme of the technical sessions of the annual mid-year convention of the American Society of Refrigerating Engineers, held June 8, 9, and 10 at this Midwest Spa.

While the last decade has seen sweeping advances in the use of refrigeration in retail food stores and in the homes, it is only very recently that modern means of refrigeration have come into use in the places where the raw foods are found or produced—the produce farms, cattle ranches, and fishing banks.

Speakers at the technical sessions on the first two days of the meeting told the engineers of the advance that had been made in this field of application, and the further requirements of the field that will require equipment of special design. Among the papers that were concerned with this problem were the following:

"Farm Refrigeration Equipment that Earns Its Keep," by Mack Tucker of the TVA (reported on page 6); "Use of Refrigeration on Farms," by T. E. Hienton, Purdue University (reported on page 7); "Rural Storage Lockers," by Roger Sprague, Baker Ice Machine Co. (reported on page 6); "Refrigerated Trailers," by W. R. Kitzmiller, Frick Co. (reported on page 14).

(Concluded on Page 4, Column 4)

88 May Installations New Chicago Record

CHICAGO—Setting a new all-time high, both in number and capacity of installations, 88 air-conditioning plants were contracted for in Chicago during May, according to statistics compiled for the month by Commonwealth Edison Co.

May air-conditioning sales exceeded by 20% the total for the same month last year. Combined capacity of installations was 1,321 hp., an increase of 94% over May of 1936.

Restaurants headed the list of air-conditioning contracts last month, 30 installations being contracted for in that classification. Private offices ranked second with 14 installations, and general offices and drug stores were next with nine installations each.

Residential conditioning was fourth in the month's list, ranking alongside

(Concluded on Page 4, Column 3)

E. B. Newill, in Talk to A.S.R.E., Describes Improvements Made in Household Units During Past 4 or 5 Years

By Phil B. Redeker

FRENCH LICK, Ind.—How improvements in the design and construction of household electric refrigerators in the past five years have given the American housewife greater food protection and additional convenience in the use of her refrigerator at reduced first and operating costs was graphically described by E. B. Newill, assistant general manager of the Frigidaire division, General Motors Corp. at the closing session of the midyear convention of the American Society of Refrigerating Engineers here last week.

In approaching the subject Mr. Newill drew analogies between 1937 models and refrigerators that were made in 1932 and 1933, and brought out the following points:

1. Better dependability. Improved construction of seals and other component parts has greatly reduced the percentage of operating failures.

2. Noise level. Tests have demonstrated, said Mr. Newill, that the noisiest units today are quieter than the quietest units that were being built five years ago.

3. Improved compressor efficiency. Mr. Newill said that tests on four different makes, comparing models made in 1933 with those made in 1937, showed the following results

(tests made in a 90° F. room with 7° F. refrigerant):

Make	Results in B.t.u. per watt hour	
	1932 Unit	1937 Unit
A	2.50	4.05
B	2.64	3.64
C	1.92	3.74
D	2.23	3.96

4. Lower interior cabinet temperatures, with less current consumption. Mr. Newill said tests had been made with the 6-cu. ft. models of three different makes for the years 1933 and 1937 in a 90° F. room with factory cold control setting and normal food and ice loads, and the following results obtained:

Make	Yearly Model	Cabinet Temp.	Kwh. Per Day
A	1933	45.8	2.75
A	1937	42	1.66
B	1933	45	2.41
B	1937	41.3	1.62
C	1933	45.1	2.16
C	1937	41.3	1.66

In connection with these tests, Dr. L. A. Philipp of Kelvinator Corp. asked if it were not true that cold control settings on 1937 models were not designed to provide lower cabinet temperatures in 1937 models than in 1933 models. Mr. Newill admitted this to be true, but pointed out that the tests showed better operating results at lower operating cost.

5. Greater ice making capacity. A

(Concluded on Page 4, Column 1)

Electrolux 'Bargain' Rouses N. Y. Dealers

NEW YORK CITY, June 14—Announcement by Consolidated Edison Co. of a "2 in 1 Bargain" combination offer of a free roaster-grill or kitchen ventilating fan with each sale of an Electrolux gas refrigerator during a June-July sales campaign has aroused protests from metropolitan electrical appliance dealers.

These protests have followed on the heels of the indignation which occurred when the utility staged an April sales campaign in which \$15 ice box trade-in allowances were offered on Electrolux sales.

Following announcement of the campaign to a meeting of about 500 dealers on June 1, Consolidated Edison began its June-July offer, through its outlets in Manhattan, the Bronx, Westchester, and a part of Queens county, of either a Westinghouse roaster-grill listed at \$29.90 or an Ilg kitchen ventilator retailed at \$26, with each purchase of an Electrolux refrigerator.

An advertisement announcing this offer was published in the New York Herald-Tribune on June 10 with announcements of the reduction of a 4-cu. ft. Electrolux to \$121.50 cash. Formerly, this box retailed at \$134.45.

(Concluded on Page 24, Column 3)

Luscombe Named Penn Sales Manager

DES MOINES, Iowa—Appointment of Robert H. Luscombe as sales manager of Penn Electric Switch Co. has been announced here by Malcolm E. Henning, executive vice president.

Coming to the Penn company from Des Moines Gas & Electric Co. three years ago, Mr. Luscombe was first put in charge of sales to accessories jobbers and distributors and the gas heating industry.

More recently he became manager of the company's New York branch office, where he will continue his activities until the Penn organization finishes moving into its new plant and office at Goshen, Indiana.

New Jersey Utility's Sales Up 50.8%

NEWARK—Sales of household electric refrigerators by Public Service Electric & Gas Co. during the first quarter of this year were 50.8% higher than in the same period of last year, according to H. P. J. Steinmetz, vice president in charge of sales for the utility company.

Scranton Dealers Organize to Maintain Prices; Distributor For Norge Sets Up Schedules

Trilling and Montague Tells Dealers They Must Sell at List

PHILADELPHIA—Trilling & Montague, Norge distributor in eastern Pennsylvania, has notified its dealers that, effective immediately, prices, trade-in allowances, and sales practices have been established under the Pennsylvania Fair Trade Practice Act.

Under terms of the agreement, sent dealers under date of June 5, no retailer may sell, advertise, or offer for sale any Norge products at a price below that stipulated in the retail price schedules, a copy of which accompanied the notice.

The agreement also provides that "no dealer may give any article of value, or make or give any concession, refund, or discount, which diminishes the price paid by the consumer."

(Concluded on Page 2, Column 3)

Cleveland Group to See Code Enforced

CLEVELAND—Members of the Cleveland Retail Appliance Dealers Association are cooperating in seeing that uniform trade practices codes recently established by distributors are enforced, it became known last week when complaint blanks for use in filing notices of violations were sent to members of the association by Secretary George Walker.

Distributors, through the Cleveland Appliance Wholesalers' Association, recently set up codes pertaining to trade-ins, credit terms, wholesale buying, and other practices, and "recommended" them to their dealers. Now the dealers are helping enforce these regulations through the complaint and investigation system.

"Each complaint will be investigated, and should the facts warrant, the offender will be dealt with accordingly," Mr. Walker's notice to association members read.

Some members of the association have reported that their distributor's salesman have warned them to observe the sales policies set up for them, and that violation of the code will result in loss of the line, the notice continued.

The complaint form asks for the name of the complainant, and the person against whom the complaint is made.

"This form should be used to register a complaint against any offense detrimental to the public or the household appliance industry," the form reads. Identity of complainants will be kept confidential, it is pointed out.

Formation of County Group Is First Step toward Contract Enforcement

By W. H. Long

SCRANTON, Pa.—Formation of a Lackawanna County Electrical Appliance Distributors' Division of the Scranton Better Business Bureau was announced here June 9 as the first step in a movement to maintain local electrical appliance retail prices under terms of the Pennsylvania Fair Trade Practice Act.

Representatives of seven Scranton distributors met with T. F. Leahy, secretary of the Scranton Better Business Bureau and instigator of the movement, at the Hotel Casey where unanimous approval of the new association's organization was voted and a set of by-laws adopted for governing the group.

First tangible evidence of the determination of local distributors to require their dealers to adhere to price maintenance contracts was announced at the meeting by S. L.

(Concluded on Page 2, Column 1)

'Sitdowners' Again Occupy Kelvinator Plant at Detroit

DETROIT, June 15—Strikebound for the second time in five months, the Plymouth Road plant of the Kelvinator division of Nash-Kelvinator Corp. has been held by alternating shifts of "sitdowners" since June 10 because of the company's alleged refusal to grant a 25% wage increase for office employees as demanded by Mechanics Educational Society of America.

According to an unconfirmed report received late today, representatives of both the company and the union had been invited to meet Wednesday morning (June 16) in the office of Duncan C. McCrea, Wayne county prosecutor, for an attempt to reach an amicable settlement.

Kelvinator officials had made no official statement by late Tuesday night, but Matthew Smith, national secretary of MESA, declared that the company had not attempted to negotiate with union representatives.

It is understood that negotiations for the wage increase were instigated several weeks ago, and that early last week office employees (many of whom MESA now claims as members) staged what amounted to a

(Concluded on Page 24, Column 3)

Industry's Engineers Have Serious Discussions and Hours of Fun at French Lick Meeting



(1) Dr. W. R. Hainsworth of Servel and Harry Williams of Frigidaire, the A.S.R.E. president, engage in a serious discussion of industry problems during a lull in the convention sessions

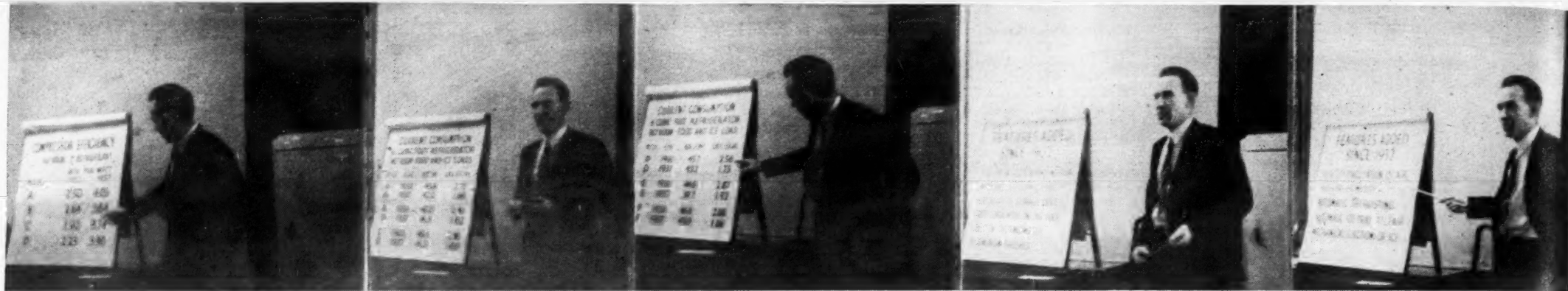
at French Lick, Ind. last week. (2) W. Parkhurst learns about refrigeration in the Scandinavian countries from O. G. Hoyer of the firm Brodrene Gram, refrigerating equipment makers

of Vojens, Denmark. Mr. Hoyer was a guest at the convention. (3) Two friends of long standing who have worked together in promoting association activities in the refrigeration

industry are J. F. Nickerson (left) publisher of Ice and Refrigeration; and Gardner Poole, vice president of Birdseye Frosted Foods Corp. (4) Who won the golf tournament? That's the

problem being solved by George Bright (left) well-known Detroit consulting engineer; and J. L. Shrode (standing) and A. B. Schellenberg of Alco Valve Co.

Frigidaire's Assistant General Manager Tells What's Better about 1937 Electric Refrigerators



E. B. Newill, assistant general manager of the Frigidaire division, General Motors Corp., traced the advances which have been made in

the design and construction of household electric refrigerators over the past five years, in an address before the A.S.R.E. convention last week in

French Lick. He reported the results of tests which have been made, showing how improvements in design and construction have resulted in better

food-storage cabinet temperatures and increased compressor efficiency, with less current consumption. He is pictured here in characteristic poses

pointing to charts which show the comparative test data. Beginning on page one of this issue is a digested report of Mr. Newill's findings.

Better Business Bureau Sponsors Formation Of Group to Bolster Scranton Price Setup

(Concluded from Page 1, Column 5) Gershman, of Trilling & Montague, Norge distributor for Lackawanna county.

In affirming his company's approval of the new division, Mr. Gershman declared that Trilling & Montague would issue price-fixing contracts to its local Zenith radio dealers effective June 10. Similar contracts on all Norge appliances, including electric refrigerators, would be issued as soon as possible irrespective of other distributors' actions on the matter, Mr. Gershman said.

Formation of the new distributors' division, it is said, came about as a result of dissatisfaction expressed by several major appliance retailers with widespread price "chiseling."

Complaints presented to officials of the local Better Business Bureau led to issuance of invitations to distributors to attend a meeting for consideration of proposals to form a distributors' division of the Bureau which would enforce price maintenance contracts with local appliance retailers. This meeting was held May 19.

At a second meeting held May 26 attending distributors were given copies of a questionnaire requesting the following information:

(1) Whether they were in favor of issuing price maintenance contracts to dealers under provisions of the Pennsylvania Fair Trade Practice Act if all other distributors doing business in the area did likewise.

(2) Whether they would be willing to cooperate with a distributors' association organized for the purpose of promoting compliance with these contracts.

(3) Whether they would attend a distributors' meeting on June 9 at the Hotel Casey to discuss formation of a Lackawanna County Electrical Appliance Distributors' Division of the Scranton Better Business Bureau.

At the June 9 meeting, T. F. Leahy, who is acting as secretary of the new division, announced that affirmative answers had been received from the following local firms:

J. J. Pocock Co.; Trilling & Montague; Raymond Rosen Co.; General Electric Supply Corp.; Charles B. Scott Co.; Penn Electrical Engineering Co.; Anthracite Radio Sales Co.; Scranton Electric Construction Co.; Household Appliance Distributors, and Scranton Electric Supply Co.

Gordon Biehl, of Biehl's, Inc., Kelvinator distributor, reported in a letter that his firm would be willing to cooperate in bringing about better business conditions, and D. T. Lansing Co. conveyed its assurances through Mr. Leahy that it would also cooperate with the new division's objectives.

On motion of F. H. Espie, of Trilling & Montague, Mr. Leahy was instructed to invite all Lackawanna county distributors not in attendance to join the association and to supply them with a list of those already

complying with its price maintenance contracts.

Eligibility for membership in the division, it was decided, should be membership in the Scranton Better Business Bureau. Distributors present were asked to urge their dealer outlets to apply for membership in the Bureau.

It was also voted that all distributors be urged to consult their attorneys immediately for the purpose of issuing dealer contracts under provisions of the Pennsylvania Fair Trade Practice Act on or before July 15.

Under provisions of the division's by-laws, appointment of a grievance committee of three members to handle complaints regarding price-cutting has been made. Monthly meetings of all division members has been made mandatory.

Distributor members have agreed "to require all retailers served by them to sign contracts which provide that the retailer shall not sell trade-marked merchandise 'except at the price stipulated by the vendor' as provided for under the terms of the Pennsylvania Fair Trade Practice Act and that he shall not give any trade-in allowances in excess of the maximum trade-in allowances stipulated by the distributor."

Dealers violating any such contracts, it has been provided, shall be called before the grievance committee. This committee has been empowered to review evidence, recommend penalizing action, and report such recommendations to the general membership.

A further provision states that "all members should use the factory list prices recommended for the local zone as the basis of figuring discounts to dealers. No distributor should create fictitious list prices for this purpose."

Advertising of fixed trade-in allowances which are used to cover up actual price cuts has been banned. Giving of a trade-in allowance where no merchandise has been traded in has also been established as a practice demanding penalties from the grievance committee.

Another by-law provision states that discontinued models of major appliances shall be advertised as such, and that failure to do so will be considered a violation of the distributors' agreement.

Distributors' representatives attending the meeting were as follows: Paul Hill, Penn Electrical Engineering Corp.; Howard J. Tuzzer and Leonard A. Kellogg, Crosley Radio Corp.; William Schlanger and Willard D. Harris, Anthracite Radio Sales Co.; T. B. Mooney, J. J. Pocock Co.; D. H. Lewis, Scranton Electric Construction Co.

Richard Crooks, General Electric Supply Corp.; F. H. Espie, E. S. Manches, and S. L. Gershman, Trilling & Montague; William W. Riday and Joseph Winzel, Raymond Rosen Co.; and Mr. Leahy.

Trilling & Montague Sets Price Schedule & Fixes Trade-in Allowances

(Concluded from Page 1, Column 4) rectly or indirectly would result in a price to the consumer below the price stipulated in the retail price schedules.

"This includes, of course, the selling, advertising, or offering for sale of any Norge products in combination with other articles at a single or joint price."

The agreement establishes 1/2% per month of the unpaid balance for the unexpired terms of contracts as a fixed financing charge.

Trade-in allowance schedule sent dealers with the notice establishes \$5 to \$35 as the maximum allowances on models ranging in price from \$139.95, for the 4-cu. ft. box, to \$489.95, for the 12-cu. ft. unit, when ice boxes are taken in trade.

Allowances on used mechanical refrigerators range from \$20 to \$100 on the same models. "Allowances can only be used on actual trade-ins, and may be applied only where the dealer actually takes possession of the electric or gas refrigerator being traded in," the agreement reads.

The distributor offers to make appraisals in special cases, where the dealer feels that a larger allowance is warranted than that established in the price schedule.

Schedule of minimum prices on 1936 models, sold as "special" this year, also has been fixed. Trade-in allowances are not permitted on the previous year's models.

Price schedules for used, repossessed, and old models will be sent dealers as soon as they are prepared, the notice said. Such schedules, however, are included in the agreement and are binding under law, dealers were reminded.

Instalment Selling & Growth of Trade Regulation to Be N.R.D.G.A. Topics

CHICAGO—The rising volume of instalment selling and the effect of the present trend of legislation and regulatory movements within industry on retail merchandising will be major subjects of consideration at the mid-year convention of National Retail Dry Goods Association to be held in the Palmer House here, June 21 to 24.

Instalment selling will receive more attention than any other credit subject in the six scheduled meetings of the association's credit management division, and price maintenance laws will be discussed at a joint meeting of the merchandising division and the controllers' congress.

How department stores may become larger outlets for major electrical appliances will be explained at a general meeting Monday night, June 21, with both retailers and representatives of the appliance industries outlining ways to step to profits and volume in the field.

Herschell Lutes, divisional merchandise manager of J. L. Hudson Co., Detroit, will be chairman of the session, and speakers will include George E. Whitwell, chairman of National Kitchen Modernizing Bureau; J. S. Bartlett, president of the Electrical League of Washington, D. C.; and R. B. Zimmerman, general manager of appliance sales for General Electric Co.

An open forum following the speeches will cover such topics as: What's wrong with the profit showing in major appliance departments? Are operating and selling expenses too high? Is the mark-up sufficient? Are instalment selling terms too severe? Where should major appliance departments be located in the

store? What is the best method of compensating floor salesmen? Outside salesmen? What are the qualifications of a good outside salesman? How do you select them? How can department stores and utilities cooperate advantageously? What is a reasonable percentage to spend for servicing appliances?

Five of the credit management sessions will center around a series of major studies under preparation by the division during the last several months. The "1936 Credit Department Operating Results" study, covering important control statistics used by credit managers to gauge their operating results with previous records and with records of other stores, will be presented at the first of these.

Department of Commerce representatives have been invited to present at the same meeting the results of their Retail Credit Survey, with particular emphasis on deferred payment selling.

A report on deferred payment selling policies and practices, stressing so-called "soft goods" selling and the terms situation, will highlight the second session. Others will feature credit department expense, credit sales promotion, and credit bureau services, reports, and costs.

Q. F. Walker, economist of R. H. Macy & Co., New York City, and A. Lincoln Nassau, general manager of The Big Store, Cincinnati, will lead the forum on price maintenance trends.

Merchandisers will also study recent developments in retailer relations with manufacturers, and how cooperative efforts between the two may benefit both manufacturing and distribution.



and don't forget to check the DOOR GASKETS

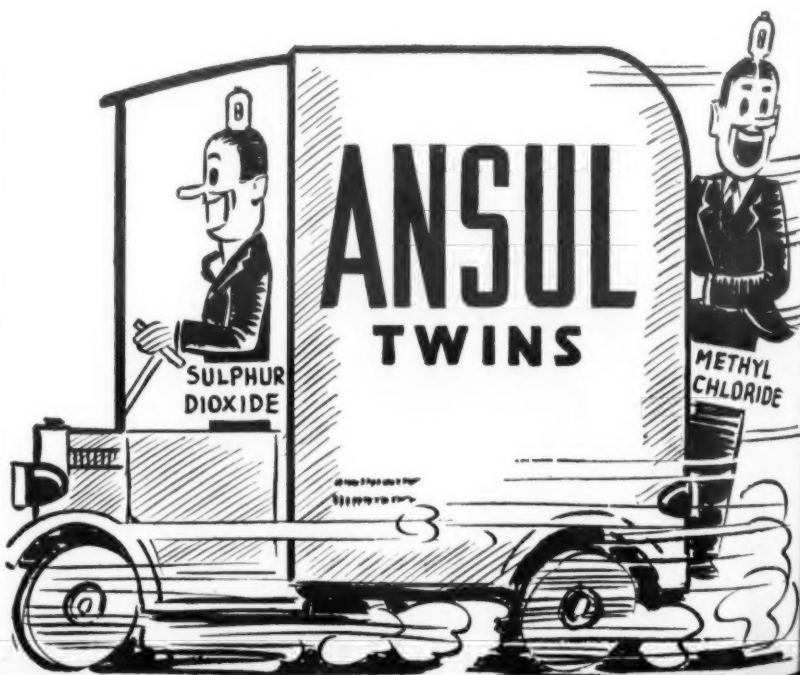
In justice to your customers as well as yourself, don't fail to check the door gaskets on all refrigerators that are five years or more old. Chances are they have lost their efficiency. You may be sure the user is not obtaining economical refrigeration and it is an easy matter to show him where a few dollars spent for gasket replacement will be returned quickly in reduced operation cost. You make a profitable sale and the customer makes a saving. That's service.

And don't forget, too, that Miller is your logical source for gasket supplies. As the largest and oldest supplier of rubber parts to refrigerator manufacturers, Miller offers a simplified line of 20 gasket types with which you can service 80% of all units made. Complete stocks insure immediate delivery. Remember—check the door gaskets and you will get bigger checks from your customers. Get illustrated Miller price list from your local jobber or write direct.

THE MILLER RUBBER COMPANY, INC., Akron, Ohio



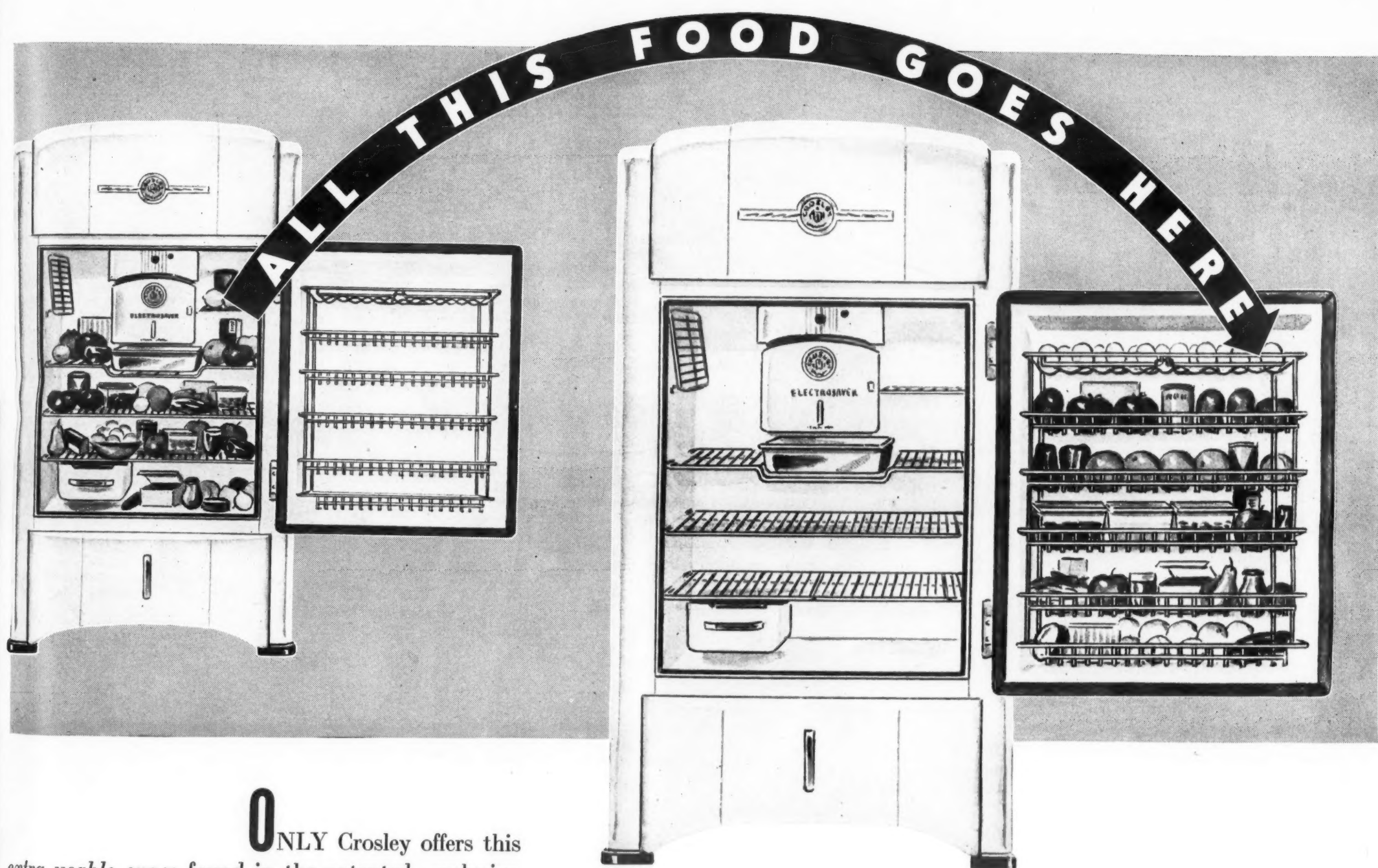
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THIS MUCH MORE *exclusively* IN THE CROSLEY SHELVADOR



ONLY Crosley offers this extra usable space found in the patented, exclusive feature of the Crosley SHELVADOR Electric Refrigerator — the Shelves-in-the-Door. That's why dealers and buyers alike want the new 1937 Crosley SHELVADOR. A simple demonstration such as is shown above sells the SHELVADOR right on the spot . . . for it gives conclusive, convincing evidence of the increased food storage capacity of the Crosley SHELVADOR.

But that's not all to be found in the new SHELVADOR models . . .

there's MORE! — MORE BEAUTY, MORE ECONOMY, MORE CONVENIENCE, MORE ACCESSIBILITY. And topping an impressive list of selling features is the marvelous, money-saving Electrosaver — the Crosley Hermetic Unit that gives fast freezing, more ice, short running time, low running cost. Line up with Crosley and the new SHELVADOR Line . . . sell the electric refrigerator that everyone is buying.

THE CROSLEY RADIO CORPORATION - - CINCINNATI

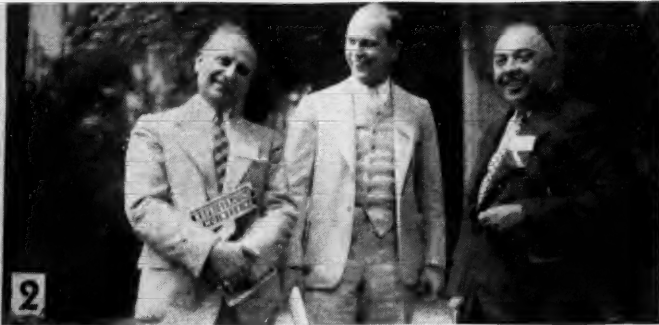
POWEL CROSLEY, Jr., President

Home of "the Nation's Station"—WLW—500,000 Watts—70 on your dial



CROSLEY SHELVADOR
ELECTRIC REFRIGERATORS

A.S.R.E. Members and Wives Take Possession of the Spacious French Lick Springs Resort



(1) An international aspect was given to the A.S.R.E. convention at French Lick, Ind., last week when O. G. Hoyer (left) of the firm Brodrene Gram, refrigerating machine manufacturer of Vojens, Denmark, attended the convention. He inspects the Contax camera with which Editor

George Taubeneck of REFRIGERATION NEWS (right) took many of the convention pictures published in this issue. In the center is George Postlewait of Kerotest Mfg. Co. (2) R. J. Thompson of Kinetic Chemicals, Inc.; Managing Editor Phil Redeker of the News; and Harry Edwards, refriger-

ant expert for Union Carbide and Carbon Co., all give a "school's out" smile after the closing session. (3) Two A.S.R.E. vice presidents and their wives. The Gardner Pooles (front) and Crosby Fields (rear). (4) Mrs. W. M. Timmerman and Mrs. Harry M. Williams.

Engineers Debate Merits of Top-Mounted And Bottom-Mounted Household Units

(Concluded from Page 1, Column 3)
test made on an 8-cu. ft. 1937 refrigerator, with full three-meal-a-day food load and operating in a 90° F. room, showed that the refrigerator would make on an average of between 70 and 80 lbs. of ice from 8 a.m. to midnight.

6. Improved insulation and cabinet manufacture, making it possible to hold better temperatures and increasing the life of the refrigerator.

According to Mr. Newill, surveys have shown that the average "K" or heat transfer factor of the insulations used has been lowered considerably in the past five years. Less wood is being used in the manufacture of cabinets, he said, and he pointed to the introduction of pan-type doors and better breaker strips as forward steps.

7. The trend to bottom-mounted condensing units. Mr. Newill declared this to be an advantage because the heat leakage into the cabinet was thereby reduced by eliminating the extra framing in the top of the cabinet.

W. M. Timmerman, manager, commercial engineering section, General Electric Co., took exception to this point, declaring that any improvement in efficiency may have been coincident with the relocation of the unit, but not of necessity due to the change in unit position.

"It is true that with a top-mounted unit, structural framework is necessary in the top of the cabinet to support the unit, and consequently the heat conducted through the top of the cabinet is greater with such an arrangement than with a bottom-mounted unit where the structural strength is not required in the top," said Mr. Timmerman.

"However," he continued, "with a bottom-mounted unit, the heat from the compressor and condenser materially increases the heat leakage through the bottom and back of the cabinet, which, particularly under heavy-duty conditions, more than

offsets the heat conducted through the top framework.

"Since General Electric uses bottom and top-mounted units, we have studied this question very carefully, and the results of our tests definitely show that with a given amount of cabinet insulation the top-mounted unit is the more efficient. Of course, by adding a little more insulation to the bottom and back of the cabinet, the additional heat transfer due to the heat from the compressor and condenser can be compensated for. In our own case we use identical units for bottom and top mounting, and under normal conditions of operation in the home the operating cost of the two is the same."

Mr. Newill replied to Mr. Timmerman's comments by saying that he was in full agreement with Mr. Timmerman when special measures were taken, but that where no special precautions were taken, in his opinion the bottom-mounted unit was more efficient.

8. Distribution of refrigerant. In this connection Mr. Newill pointed out that the improved construction of evaporator plus designs which provided a scouring or spraying action of the refrigerant had greatly "stepped up" the refrigerating work of the evaporator.

This was demonstrated, said Mr. Newill, by the fact that 1937 models, as compared with models five years ago, were operating with cabinet temperatures 4° F. lower but with evaporator temperatures 6° F. higher, this making possible an improvement of 23% in the efficiency of the refrigerating machine.

9. Use of heat interchangers. Where used, the heat interchanger makes possible gains in operating economy.

10. Placement of the high side float, where used, at the top of the cabinet instead of at the bottom. When used at the bottom there was much waste refrigerating effect, because of the long run of the line

to the evaporator, Mr. Newill pointed out.

11. Reduced friction losses. Lubrication systems have been vastly improved, and bearing surfaces reduced, thus cutting down friction losses, declared Mr. Newill.

12. High quality of machining. The automobile industry, which boasts of machining its parts to thousandths of an inch, is far back of the refrigeration industry, which finishes its wearing surfaces to ten thousandths and hundred thousandths of an inch. In connection with this point Mr. Newill passed around parts with surfaces so finely machined that they adhered when placed together.

In addition to these mechanical improvements which have given the housewife better food-keeping facilities at lower operating costs, many features have been added to refrigerators since 1932 which have made it a more attractive piece of household furniture, and more convenient to use, Mr. Newill stated.

These added features were outlined by Mr. Newill as follows:

1. Beauty of exterior and interior.
2. Wide and shallow cabinets (putting shelf space "up front").
3. Flexibility of storage devices (sliding shelves and pans).
4. Food container on the door.
5. Built-in thermometer.
6. Aluminum shelves.
7. Forced circulation of air.
8. Systems which provide higher humidities (such as through using double-shell evaporators insulated from each other and fed from different refrigerant circuits).
9. Automatic ice try release.
10. Mechanical ejection of ice cubes.

30 Chicago Restaurants Conditioned in May

(Concluded from Page 1, Column 1)
stores of miscellaneous classification with four installations for the period. Total number of air-conditioning plants installed or contracted for in Chicago at the end of May was 1,614.

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A.S.R.E. Plans Rating & Testing of Expansion Valves as 1937 Project

(Concluded from Page 1, Column 1)

Also in line with field of application was the discussion by Gardner Poole of Birdseye Frosted Foods Co. of studies on "Seasonal Variation in Vitamin C Content in Fresh Market Vegetables," which demonstrated the importance of refrigeration in maintaining the highly important vitamin C content in such produce.

A paper that evoked much interest at the final technical session was that on "Improvements in Household Refrigerators." It was given, with the aid of charts and demonstration models, by E. B. Newill, assistant general manager of the Frigidaire division, General Motors Corp. It is reported on page 1 of this issue.

Several important projects will be undertaken by the A.S.R.E. Committee on the Preparation of Standards, according to the plans outlined in the report of the Committee for the Promotion of Standards, read by Chester Lichtenberg of General Electric Co., chairman.

Methods of rating and testing refrigerant expansion valves and sizes of refrigerant lines constitutes one of the most important projects to be undertaken. Scope of this project will include:

1. Methods of rating refrigerant expansion valves for four classes of refrigerants.
2. Methods of testing refrigerant expansion valves.
3. Standard sizes of suction and liquid lines.

Other standards projects to be undertaken include methods of rating and testing self-contained drinking water coolers; methods for rating and testing self-contained can-type milk coolers; methods for testing refrigerated trucks; a test code for all unfired refrigerant containing vessels 6 inches in diameter or larger forming part of a refrigerating system.

The proposed project for rating and testing natural convection air coolers was deferred because of the difficulty of defining the very wide variety of application and usage conditions.

Gardner Poole, vice president of Birdseye Frosted Foods Co., invited the A.S.R.E. Council to hold its September meeting in conjunction with a four-day conference on food-handling problems sponsored by the Massachusetts Institute of Technology in Boston.

Tentative dates for the conference have been set for Sept. 14 to 18. It is understood that two days of the conference will be devoted to problems of food preservation by refrigeration.

Next annual meeting of the society will not be held in December, as has been the usual custom, but will be "recessed" over until the end of January, so that it will coincide with the International Heating & Air Conditioning Exposition. The convention will probably open on Jan. 24, 1938.

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Refrigerators Are Featured in Dept. Store Anniversary

PITTSBURGH—As a part of its "66th Anniversary Sale" conducted during June, Kaufmann's, largest department store here, is featuring displays of six lines of mechanical refrigerators in its seventh floor showroom, according to Max Fischman, household appliances manager.

Besides full displays of Westinghouse, General Electric, Norge, Frigidaire, and Electrolux refrigerators, Kaufmann's is featuring its "KO" line of electric refrigerators, a private brand which the store introduced to Pittsburgh last year.

Throughout the duration of the sale the store is publishing large display advertisements each day in three Pittsburgh newspapers—the Press, Telegram, and Post—and broadcasts refrigeration promotion through a local radio station. Thousands of circulars have been sent out to store customers in this area advertising the event.

As a special inducement, Kaufmann's has reduced the price of its 7-cu. ft. "KO" refrigerator from \$179.50 to \$159.50 during the sale, according to Mr. Fischman. This fact has been advertised on posters placed in all street cars and buses operating in Pittsburgh and surrounding communities.

Refrigeration sales in the store have shown a substantial improvement this year, declares the appliances manager. Fifteen full-time salesmen are employed on the floor to handle the increased volume of business brought about by the present sale.

Appliance Chain Leases Long Island Store

LONG ISLAND, N. Y.—Davega Stores Corp. has leased for a long term a store at 45-57 Main St., Hempstead. It will be operated as one of the largest retail units of the company, which has 30 stores throughout the metropolitan district. The firm handles refrigerators and other household appliances, sporting goods and sports apparel.

Manchester Dealer to Equip Apartment House

MANCHESTER, N. H.—Arthur J. Fournier, proprietor of an electrical appliance shop here, has purchased a three-story business block which he plans to make into an apartment house. It will be equipped with the latest model electric cooking and refrigeration systems.

Dayton Distributor Names 3 New F-M Dealers

DAYTON—Three new dealers have been appointed by Appliances, Inc., Fairbanks-Morse distributor, according to Clyde Graham, manager.

They are: Speare & Gage, Greenville, Ohio; Greenfield Furniture Co., Greenfield, Ohio, and Roy Miller Furniture Co., West Milton, Ohio.

C. W. Gilmer Becomes Belting Sales Engineer at N. Y.

NEW YORK CITY—C. W. Gilmer, formerly mechanical sales manager of the Seattle branch of the mechanical goods division of United States Rubber Products, Inc., has been appointed to the company's New York office as belting sales engineer, to operate under T. A. Bennet, belting sales manager here.

L. F. Koepp, formerly salesman in the Seattle district, has been appointed to succeed Mr. Gilmer in Seattle.

Mullins' Furniture Store Reopens after Fire

JERSEY CITY, N. J.—John Mullins' Furniture Store, Leonard and Crosley refrigerator dealer, has reopened following a four-month redecorating and remodeling program necessitated by a fire. The firm was established in 1856.

Sandler to Retail Norge In North Baltimore

BALTIMORE—Sandler Bros. has been appointed exclusive representative for all Norge electrical appliances in the north Baltimore territory.

OF COURSE PORCELAIN ENAMEL WILL CHIP!

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substance—hard as glass. —But housekeepers don't clean mirrors, windows, refrigerators or sinks with a smithing hammer! —Considering the millions of mirrors and plate glass windows in use—how many ever break? A small fraction of 1 per cent! —Now suppose all those millions of mirrors were backed up with a sheet of steel—how many would break? A very precious few!

The fact that porcelain enamel is hard enough to chip, under very heavy impact, is a big feature in its favor. Being so hard—porcelain enamel is the one finish that won't scratch or dull or lose its lifetime lustre. Being flint-hard, porcelain enamel is the one finish in which delicate colors will never fade; the one finish that is absolutely non-absorbent. Being as hard as glass, it is clean, sanitary, enduring.

Porcelain enamel is the one sales feature which gives lifetime satisfaction. Feature it—talk it—push it—sell it. Be glad porcelain enamel is hard enough to chip. If it wasn't, it wouldn't be porcelain enamel.

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COMMERCIAL NEWS

Development and Present Applications Of Rural Storage Lockers Outlined For A.S.R.E. by Baker Engineer

FRENCH LICK, Ind.—The development, design, and application of "rural storage lockers" were outlined in a paper prepared for the A.S.R.E. convention here last week by Roger Sprague of Baker Ice Machine Co.

According to Mr. Sprague's paper, the now extensive practice of cold storage locker plants had its origin in Centralia, Wash., in 1917, though at that time separate compartments for individual customers were not provided. It came about that many friends prevailed upon a Mr. Winchell, an ice plant owner, to store their domestic meats and wild game, so that they could enjoy the advantages of game and of quantity buying after the closed season.

The first product was a number of pheasants. Having no other place to store them, he placed them in an ice can, filled the can with water, and froze the birds into a block of ice. The hunter forgot them for months. On Christmas day he called for them and they were found to be in good condition.

DEMAND GROWS

The demand for this service soon became so great that ice storage space was given over to meat storage—in apple boxes, lard buckets, baskets and almost any receptacle that people could find in which to place their perishables. Later a separate storage room was built, divided off into shelves and partitioned spaces. These compartments were then rented out.

Ten years later Winchell was obliged to build a special locker plant, along more modern lines. The plant was equipped with uniform boxes, holding about 150 lb. of meats in 8 cu. ft. of space.

A charge was made of \$1 for the first month and 25 cents for each month thereafter. The idea of such a service since then has spread to other ice plants and to creameries, making for closer contacts with their communities.

Another pioneer in the farmers' or cold storage locker business was the Walla Walla Dairymen's Association. In 1926 they started allowing farmers to freeze rabbits, chickens, pork and other farm produce in their butter

storage room. Later the association put in special rooms for locker customers in four plants.

Two other firms in Walla Walla have locker storage plants; the town of 16,000 inhabitants now had about 1,400 lockers.

MECHANICS SIMPLE

The mechanics of refrigerating a cold storage locker plant are simple and conventional, notwithstanding that competing salesmen claim that they have the only successful system. There are no experts in the locker game, Mr. Sprague's paper related.

Mr. Sprague explained in his paper that he is familiar with perhaps 100,000 lockers out of an estimated total of 850,000 lockers now in use throughout the country. In this connection he has had experience in designing (if that is the word) locker plants of all types and sizes, from 150 to 3,000 lockers.

Essentially, all are along the same lines, consisting of a process or cutting room, a chill room, sharp freezer, locker room, reception room, office and machinery room—each varying in size and design to suit the individual requirements.

The chill or curing room is held at 33° F., using overhead pipe coils with drip pans. The sharp freezer is held at -10° F., using shelf coils with added overhead coils much the same as in ice cream hardening rooms of smaller sizes. The locker room is held at 10° to 12° F., using overhead pipe coils.

Hot gas defrosting lines usually are used for plants of 750 lockers and up. It has been found that for small plants, coil scraping is easily accomplished and with little labor.

While both float control and thermal expansion valves have been employed, the latter is more commonly used, and with good results. Each room is independently and automatically controlled, using magnetic stop valves on liquid and suction lines, with back pressure regulating valves on chill and locker rooms. The compressor motor is operated through a pressurestat. The entire plant is full automatic controlled.

Air blasts or unit coolers occasionally have been tried but with unsatisfactory results, due to "freezing burns," rapid discoloration, and dehydration of meats. The locker plant does not lend itself to air conditioning, as in the packing house field, where the refrigerated spaces are many times larger than locker plant chill rooms, said Mr. Sprague's paper.

MEAT PROCESSING

All meats are processed or converted to "cuts" as desired by the owner. They are then wrapped in parchment and placed in the sharp freezer and from there to the owner's locker. Many plants are miniature packing houses, having slaughtering facilities, sausage manufacturing, pickling vats, dry salt curing and smoke house—in fact, everything except rendering.

Community housewives are resourceful and quick to use the locker service. It has been estimated that an average locker renter saves \$100 yearly in food bills, and in addition, enjoys fruits, berries, vegetables and seasonal foods long after strawberries, fresh peas, sweet corn, and asparagus are out of season, or too high for the average family.

Would not a housewife rather take along a pound of fresh frozen peas from her locker, than carry home three pounds of pods and shell them herself? But, where are the fresh peas for Christmas or New Year's Day?

In my locker, she says—I placed them there, shelled and cleaned last June, when they were fresh, tender and plentiful. This is a common occurrence. The locker storage fills a real need for the rural family.

EXTENSION SEEN

This practice clearly is spreading the understanding of the use of refrigeration among a much wider range of people. Mr. Sprague believes the industry can look for considerable improvement in practice in this field, comparable to that which has gone on where refrigeration has been applied to the handling of fish.

Some of the plants have circulated booklets describing refrigeration of foods, with the proper temperatures of different products, and pointers on how to handle them before and after storage.

The locker plants are a positive step toward frozen package products, believes Mr. Sprague, and are doing more to awaken public interest, and overcome prejudice against frozen products, than any other avenue tried thus far.

No doubt local, state, or federal regulations will be formulated to place locker plants under pure food laws and control; this is as it should be, for the sake of the industry itself.

New Types of Farm Refrigerators & How They Are Used Described by Tucker

FRENCH LICK, Ind.—New types of refrigerators for farms, and how they are used by farmers, were described by Mack Tucker, of the Tennessee Valley Authority (TVA) at the first technical session of the A.S.R.E. Convention here last week.

Principal applications of such refrigerators enable the farmer to preserve his products properly so they are rated as a higher grade product and consequently will bring a higher price; or allow him to hold his produce in storage until the market becomes more favorable, said Mr. Tucker.

Mr. Tucker described one dual-purpose refrigerator of two-compartment design. One compartment had 5-cu. ft. capacity and was fitted with a typical household refrigerator evaporator. This compartment is for use by the farm housewife.

The other compartment, of 10-cu. ft. capacity, was fitted with a commercial-type refrigeration coil and was designed for the refrigerated storage of meats, milk, and produce.

Unusual feature of this refrigerator was its chest-type design, very much in appearance like an old-fashioned tool chest.

Another type of two-compartment farm refrigerator has been introduced by a firm on the West Coast, said Mr. Tucker.

This particular box has a 22-cu. ft. compartment maintained at 36 to 40°

F., and a 6-cu. ft. freezer compartment maintained at 15 to 20° F.

The TVA, declared Mr. Tucker, developed a 175-cu. ft. cooler box for meat storage which was placed in a general store serving a small Tennessee community.

The box was used to store the excess and marketable produce of six farm families in the community. Cost of operation of this unit for a year's period was \$42.

Another type of cooler described by Mr. Tucker was a combination reach-in walk-in type, in which the upper or reach-in part of the door swung out (something like the construction of a horse stable).

This refrigerator was of the package type, with condensing unit mounted on the top.

Cost of operation of this particular model for the year was \$46, which figured out to be ½ mill per pound of product stored.

Mr. Tucker told the engineers that there is need for a farm refrigerator of the walk-in type which has both a normal storage compartment and freezer sections.

In concluding the speaker outlined the following requirements for farm refrigerator design:

1. Low cost (no frills).
2. Ample capacity.
3. High usage value.
4. Package type recommended (easy to install).
5. Simple in design.

Hommel Awarded Contract For Coolers in Marine Hospital at Pittsburgh

PITTSBURGH—Ludwig Hommel & Co. has been awarded the contract for building two walk-in cooling rooms in the U.S. Marine Hospital.

These 9x9x6½-foot rooms will be insulated by corkboard and refrigerated by Norge condensing units and cooling coils.

The vegetable storage room will be held at 45° F., while the meat storage room will be held at 34° F. Both rooms will be equipped with steel shelving and waterproof automatic lights.

In the Pittsburgh Greyhound bus terminal, six Norge condensing units with various types of cooling coils were installed to refrigerate two large Seeger walk-in coolers, two Filtrine water coolers, an ice cream cabinet, a beer refrigerator, salad unit, and back-bar refrigerator.

Baltimore A & P Stores Install Ice Cream Cabinets

BALTIMORE—Electrically refrigerated ice cream cabinets are being installed in several of the 150 A & P retail stores in the Baltimore district. Others of the local A & P chain use American Radiator Co. cabinets refrigerated by dry ice.

Outlet for Copeland & Hussman-Ligonier Opened in Wichita

WICHITA, Kan.—Copeland-Hussman Co., distributor of Copeland refrigerators throughout Kansas and of Hussman-Ligonier products in eight counties surrounding Wichita, has been opened here by Copeland Refrigeration Co. of Kansas City, according to Nathan Baraban, head of the Kansas City company.

C. T. Diegel, formerly associated with the Copeland Co. in Kansas City, will direct operations of the new firm here.

Lipman Unit Installed in Watertown Hospital

WATERTOWN, N. Y.—A model 203 Lipman refrigerating machine has been installed in the Mercy hospital here by Kingston & McDonald, General Refrigeration Sales Co. representative here.

South Bend Store Fixture Co. To Distribute McCray

SOUTH BEND, Ind.—South Bend Store Fixture Co. has been appointed distributor for McCray Refrigerator Co. in this area. A. L. S. Hilborn is president and manager of the South Bend company.



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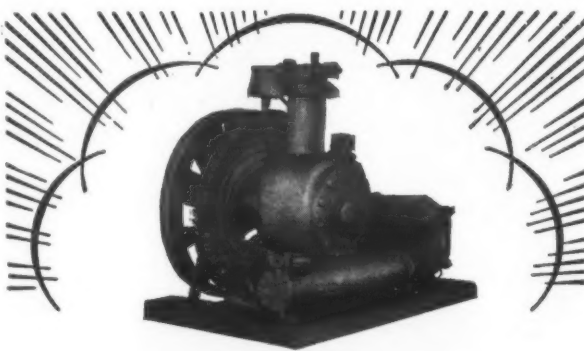
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86 condensing units comprise the Curtis line—with both air and water-cooled models. Sizes 1/6 HP to 30 HP. Write for specifications.

CURTIS

Farm Market Can Be Pushed Faster With Proper Study of Farmer's Needs, Hienton Tells A.S.R.E.

FRENCH LICK, Ind.—The farm market for refrigeration has grown tremendously in recent years and can be pushed ahead at an even faster pace if the refrigeration industry will take time to analyze the farmer's refrigeration needs and design equipment properly suited for his purposes, declared Truman F. Hienton of the Purdue University agricultural experiment station at the opening technical session of the A.S.R.E. mid-year convention here last week.

MARKETING AID

The use of refrigeration is more than an aid in the marketing of quality products, said Mr. Hienton. It plays an even more important role on some farms by enabling the growers to sell their produce when markets will yield the highest return.

"Specialized farms have been the first to utilize refrigeration equipment in their marketing programs," said the speaker. "It is worthy of note, however, that the farm household refrigerator may afford some financial return by using it to store marketable produce."

"A survey of 144 mechanical refrigerator installations on Indiana farms in 1935 revealed that 25% of them were storing some marketable produce, such as sweet cream, butter, eggs, poultry, or fresh meat."

GROWTH OF USE

"The cold storage capacity available for apple storage in New England in 1925 was about 1,600,000 bushels concentrated almost entirely in large cities, according to a recent report. This capacity had increased to 2,850,000 bushels by 1935 and the additional storage space, 1,250,000 bushels, was located at country points."

"During the same decade there has been a somewhat similar increase, particularly in private cold storages, on fruit farms in the Middle West. Of 10 such installations made in Ohio, Indiana, Illinois, and Iowa during that time—four, located in Indiana, have a combined capacity of 152,000 bushels, and four in Ohio a capacity of 135,000 bushels."

FRUIT STORAGE

"The change which growers are making from common to cold storage is naturally of interest to refrigerating engineers since it involves the installation of refrigerating machinery and usually of insulation. Factors which are influencing the growers to make this change or install entirely

new cold storages at their orchards are:

"1. Possibility of reducing labor at time of harvest.

"2. Increased return from the crop by more flexible marketing.

"3. Storage cost may be less than by commercial plant."

"One Indiana grower reported that he was able to realize \$1 per bushel for No. 2 apples by holding them in storage until the picking season was over, a return of 40 cents more than his competitors."

SYSTEMS IN USE

"Two types of cooling systems are reported in use in apple storages by Prof. C. I. Guinness of Massachusetts Agricultural College.

"One type is equipped with wall or ceiling cooling coils and depends upon natural air circulation for the cooling of the fruit."

"The second type involves the use of a blower which draws air over cooling coils and circulates it through the stored fruit. In some installations the air is drawn through brine sprayed on the cooling coils before it is circulated."

"Individual brine-spray air-blast units are being used to discharge air directly into the room in one Indiana storage while in another a blower circulates the air through ducts to the three floors of the storage."

"The availability of cold storage at an orchard may make possible the sale of cider at a good rate of return. One Indiana grower, who does not have cold storage, has refrigerated a storage tank and sells cider at the orchard at retail. The extent of his business may be appreciated from the fact that approximately \$8,000 was realized from the sale of cider during the past season."

VEGETABLE STORAGE

"Vegetable gardeners are installing cold storage plants to enable them to sell their produce when market conditions are satisfactory. The number of installations is less than that of fruit storages but is steadily increasing."

"An outstanding storage of this type is located in northeastern Ohio. There are two 10,000-bushel storage rooms with an addition to be made. On this farm, 50 acres are devoted to raising spinach, three crops of which are raised per year."

"As each crop of spinach is ready for harvest, it is cut and placed in the storage house. Root crops, such as carrots and turnips, are stored in a similar way after harvest."

"Refrigeration is considered as insurance against unfavorable weather and market conditions and has proven to be so. It has been reported that several years ago an adverse situation permitted them to sell several thousand bushels of carrots at a handsome profit."

DAIRY PRODUCTS

"Use of refrigeration on dairy farms is accepted as a necessity where milk is sold on quality basis. A study of the factors which affect the quality of grade 'A' milk and the premiums paid to producers was made from 1931 to 1933 by the New Hampshire Agriculture Experiment Station."

"The results of this study showed that fewer grade 'A' producers kept their bacterial counts under 10,000 in summer than at any other time of year, even though premium rates are highest during the summer months. The loss of premiums was traced to various causes, of which 20% was due to poor cooling."

"One of the factors which affects the quality of eggs is the temperature at which they are stored. It was then recommended that eggs should be collected several times daily during hot weather and be stored immediately in a cool, humid atmosphere. Poultry farmers who have developed markets for eggs of high quality are installing mechanically refrigerated storage rooms to cool them as soon as they are gathered."

HOUSEHOLD BOXES

"Refrigeration for the farm household is considered more than a convenience, if results of a recent study made by the author are of any significance."

"A list of electrical equipment in use was obtained from 159 farms in Iowa and Indiana during 1936 and 1937 on which electric service had been available in most cases for 15 or more years. Sixty-seven, or 42% of this group, were using household electric refrigerators ranging from 1 to 13 years in age. Fifteen of them were purchased in 1935 and 1936."

"The future mechanical refrigerator for the farm household warrants some contemplation at the present time. Two electric light and power companies, one in the southwest and the other in the northwest, have de-

veloped cabinets with net storage capacities of 30 and 28 cubic feet respectively. These units have sufficient capacity to store a considerable quantity of meat and other produce."

"A second situation confronting the farmer who may be interested in a mechanical refrigerator is that created by the rapid expansion of refrigerated locker storages. There are 130 of them in Iowa alone at the present time and one in Indiana."

"If this expansion continues and farmers use the lockers, it may be necessary for manufacturers to en-

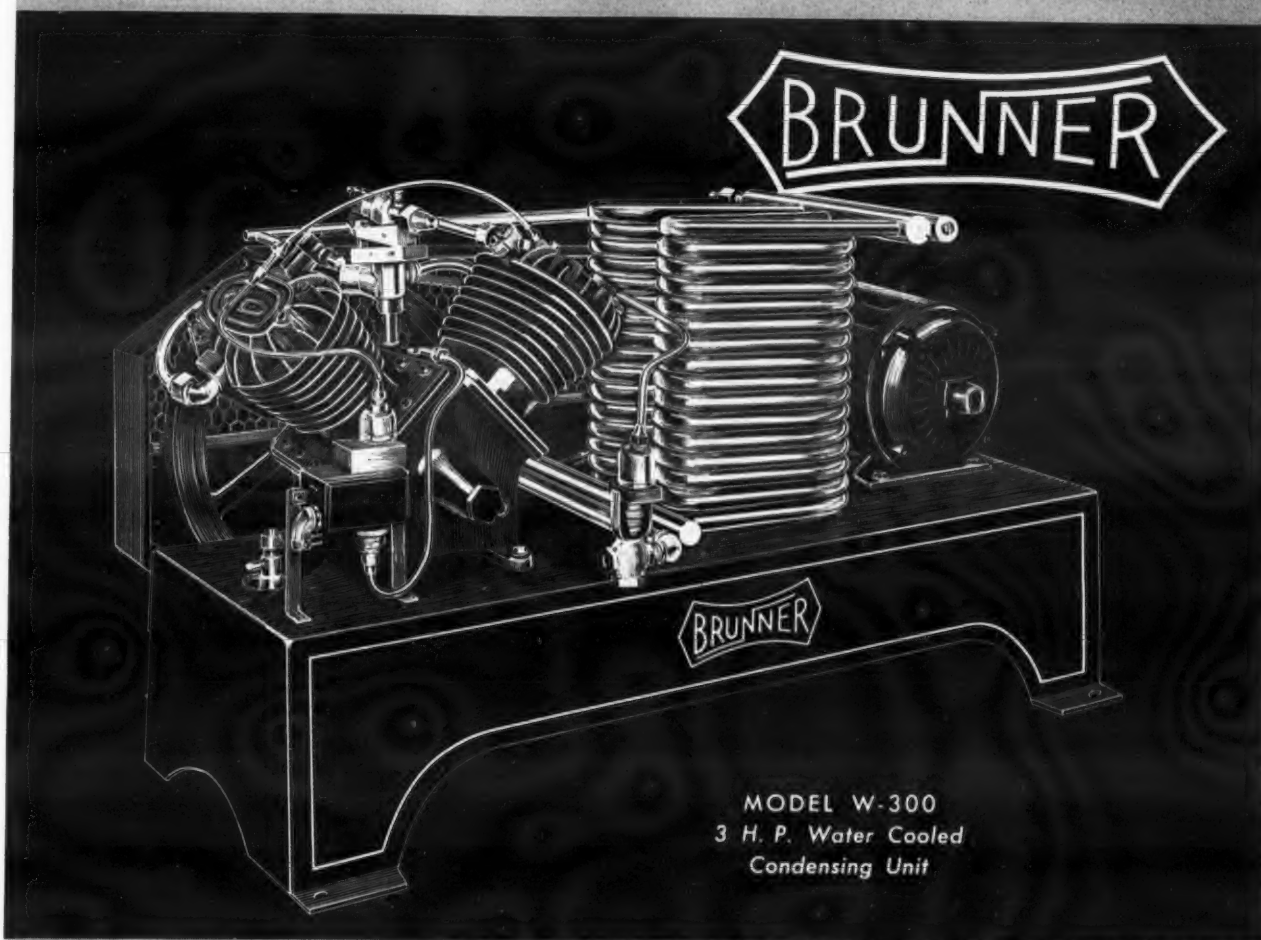
large the size of the freezing compartments in units for farm use."

"The possibilities of freezing excess fruits and vegetables for winter use which have been produced on the farm is one which is already of interest to farmers who are using the locker storages."

Wichita Norge Store Moves To Larger Quarters

WICHITA, Kan.—Downtown Electric Shop, Norge dealer, has moved to larger quarters at 137 N. Main St. L. E. Basham is manager.

THE DYNAMIC BALANCE OF RECIPROCATING PARTS INSURES SMOOTH, VIBRATIONLESS OPERATION



MODEL W-300
3 H. P. Water Cooled
Condensing Unit

Balancing the opposing masses of fast-moving metal in a complicated mechanism like the modern refrigeration unit is not the product of slide-rule computation . . . not a run-of-the-draftingroom problem. Dynamic balance—bringing each and every moving part into "mechanical accord" with every other part—this is the outcome of tireless research, intimate knowledge of refrigeration conditions, plus years of manufacturing experience. It is embodied in today's smooth-running Brunner units . . . Look into this Brunner feature before you make any decision on the best equipment to install! Watch a Brunner in action. Put your hand on the sturdy base. Feel the low minimum of vibration dynamic balance achieves. Then: consider the extra years of service it is bound to deliver. You'll find full details in the new Brunner Refrigeration Catalog, listing 47 condensing units, air and water cooled, for nearly all refrigerating and air conditioning installations. Write: Brunner Manufacturing Co., Utica, N.Y., U. S. A.

BRUNNER

BUILDS FOR *Greater* DEPENDABILITY

MODERN
to the last detail!

—these improved
refrigerator doors

SO many engineering improvements have been featured in the new ACE "Loxit" Hard Rubber Assembly units—doors, rails, jambs—that our large production facilities have been taxed to keep pace with the demand of manufacturers of display refrigeration cabinets.

Among these advantages—reduction of air leakage—lighter weight with greater strength—shock absorbing jambs—quiet roller bearing action—all with no increase in cost.

Complete range of door sizes for every cabinet type. Storage and service doors, glazing strips, trim, etc.

Manufacturers: write for complete details and prices to
AMERICAN HARD RUBBER CO.
11 Mercer St., New York, N.Y.—Akron, O.
111 West Washington St., Chicago, Ill.

ACE "LOXIT"
PATENTED
DOORS

Around the World

With George F. Taubeneck

Articles in Editor George F. Taubeneck's "Around the World" series have appeared in the following issues of the News:

Jan. 8, 1936—Detroit, Mich.; Jan. 15—Jackson, Mich., and Chicago, Ill.; Jan. 22—St. Louis, Mo.; Jan. 29—Claremore and Tulsa, Okla.

Feb. 5—Dallas, Tex.; Feb. 12—El Paso, Tex., and Juarez, Mexico; Feb. 19—Yuma, Globe, and Phoenix, Ariz.; Feb. 26—San Diego, Calif. (also California Pacific Exposition).

March 4—Los Angeles and Hollywood, Calif.; March 11 and 18—San Francisco, Calif.; March 25, April 1 and 8—Honolulu, Hawaii.

April 15—Pago Pago, Samoa, and Suva, Fiji Islands; April 22 and 29—Auckland, New Zealand.

May 6—Melbourne, Australia; May 13 and 20—Sydney, Australia; May 27—Brisbane and Townsville, Australia.

June 3—Shipboard (Sydney to Singapore), and Darwin, North Australia; June 10—Papua and New Guinea, and Soerabaya, Java; June 17—Bandoeng, Batavia, Semarang, Soerabaya, Solo, and Djocja, Java; June 24 and July 1—Singapore, Straits Settlements.

July 8—Penang, Straits Settlements, and Rangoon, Burma; July 15—Calcutta, India; July 22 and 29—Benares, Agra, Delhi, and Bombay, India.

Aug. 5—Suez Canal; Aden, Arabia; and Cairo, Egypt; Aug. 19 and 26—Tel-Aviv, Haifa, Jerusalem, and Jaffa, Palestine.

Sept. 9—Complete text of paper delivered at Seventh International Congress of Refrigeration, The Hague, Holland; Sept. 16 and 23—Colon and Barcelona, Spain, and Marseilles, France; Sept. 30—Malta.

Oct. 7, 14, 21, 28, and Nov. 4—Paris, France (including study of French quota system and survey of the French market).

Nov. 11, 18, and 25—Monte Carlo and Italy; Dec. 2—Rome; Dec. 9—Milan and Venice, Italy.

Dec. 16, 23, 30, Jan. 6, 13, and 20—Vienna, Austria, Lichtenstein, Budapest, and Hungary.

Jan. 27, Feb. 3, 10, 17, 24, and March 3—Switzerland and The Netherlands.

March 10, 17, 24, 31, April 7, 14, 21, and 28—Denmark, Sweden, and Germany.

April 28, May 5, 12, 19, 26, June 2, 9, and 16—England.

London Is English

Unlike all other great cities of the world, London is not cosmopolitan. London is English, definitely.

New York has little chunks of all nations within its confines. San Francisco breathes oriental atmosphere. Singapore has no nationality, partaking of all. Paris, Berlin, Vienna, Stockholm, Copenhagen—they all have their international aspects and quarters.

But London, no. London is like China. It may be invaded, but the invaders are soon absorbed, losing their identity. China has been overrun time and time again; but the conquerors remain to become Chinese. You go to London, and first thing you know, you're as British as the best of them.

Even the writer, staunch soil-bred middle Westerner, cultivated a clipped British mustache while in London, and was indulged in the singing British intonation before two weeks had passed.

America has left its mark on London, with its movies, its jazz, its cocktails, its soda fountains. But the institutions of no other nations are here represented. And a great body of Londoners resent the American intrusions keenly, even though they do enjoy them.

Good Manners

London therefore has a most distinct personality. You can put your finger on it—and it stays put.

It is, first of all, the world's biggest city—and lets you know it. London is not a beautiful city; but you are allowed to believe that beauty does not matter so much. London is the biggest, the richest, the most important of all cities; like the extremely wealthy, it does not need to dress well to impress others.

Not even in New York do you feel such an undercurrent of activity, so restless a surge of progressive movement. You tingle with it; and your ambition mounts apace. In London you feel like working.

As befits the king of cities, London is big of heart and soul. Good manners are preeminent. You will not be jostled on the sidewalk; you will not be annoyed by the military, or by officious civil authorities. The London "bobbies" (policemen) are the politest, most helpful in the world.

Londoners are good-humored, even tempered, sportsmanlike, law-abiding, and law-respecting.

Fine people.

You can always spot a Londoner—even in Cairo or Bombay. He will be carrying an umbrella; and one eye will be cocked permanently upward

(to see if it's going to start raining again).

Upper Strata

The West End is the colony for the aristocrats, they of the top-hats and monocles who flock to the Ascot in all their fine array and nasalate with one another about the "ripping weathah" and other such matters of great import. They are representative of a type that clutters up almost every large city.

Upper middle-class Londoners live in large, luxurious homes in such communities as Wimbledon. Invariably their homes are bounded by beautiful gardens, and possibly a tennis court. Their children are sent to the fashionable, expensive boarding schools like Eton.

Next in scale comes the lower middle-class, the bulk of London's population. The members of this group live in Tooting, Sydenham, Kingston, Enfield and such communities—and they live mighty well, too.

Of the inhabitants of the East End and dockland we have already spoken. They form the lowest strata of society in London and, at the same

time, probably the most interesting (in a detached way).

Now, what do these people do? How do they make, or eke out, a living—or don't they have to work? How do they amuse and entertain themselves? How are they governed? How do they receive their education?

The aristocrats, the "veddy, veddy wealthy," obviously have little to worry about on the score of increment. Many of them inherit their fortunes, others acquire them from well-managed property they own, still others earn it the hard way, and some have that innate knack of getting along on other folk's money.

Their diversions are of the usual type associated with the rich. They go to parties, balls, teas, receptions, and the theater. Occasionally they pay their respects to the Court, which is possibly of scant real pleasure because of the strained nerves and the necessity for maintaining the strictest decorum.

They also attend concerts and recitals, having boxes reserved for the season, and they deck out in their best togs and parade to the opera.

With the coming of the racing season they go out to the tracks and lay a block of quid on whichever horses they particularly fancy; when they win they collect, and when they lose they are provoked, even as you and I.

At odd times they visit art galleries and private exhibitions. So far, you are probably saying: "They can have it." And right you are.

As autumn approaches, the upper crusters hie themselves away to their country estates, or pop over to the Riviera and Monte Carlo for a few months. London in fall and winter is not the place for them.

The English Club

The club is an essentially English institution, and it plays an important part in the lives of the wealthier men and women of London.

Take a typical men's club like Boodles', for instance. Its members are for the most part wealthy bachelors, both young and old, who have become so accustomed to living with a group of men on equal footing that they shun the idea of marriage.

As boys they were sent to exclusive schools, where they lived, worked, and grew up with other boys from other rich families. They knew only a few months of home life each year, and being so much in the close company of their peers, they came to prefer that type of life. Thus, when they were old enough, they joined the club.

Clubs had their origin in the old coffee houses of London, where men of equal standing gathered to talk, play games, and dine together. These occasional droppings-in finally developed into fixed habits, and thus the social clubs came into being.

Today there are more than 125 different clubs in London, about 100 of them being exclusively masculine, three or four mixed, and less than 25 for women only.

A few of the clubs can be classified according to the professions of their members. However, most of them are exclusively social in nature.

Service men, present and ex, join the Army and Navy, the United Service, the Guards', and other such organizations. Prominent government officials, men of higher education, clergymen, and the like are attracted to the Athenaeum. Diplomats choose the Orlean and St. James's. The Green Room and the Garrick were originally clubs for actors, and a good share of their membership still represents the stage.

Some of the clubs associated with sports are the Badminton for coaching and horses, Ranelagh and Hurlingham for polo, the Leander for rowing, the National Sporting Club for boxing, Roehampton for golf, and—probably the largest of them all—the Royal Automobile Club. I went there for lunch one day with Editor J. B. Raymond.

There are also several political clubs, such as the National Liberal Club and the Reform Club for the progressives, and the Carlton and Junior Carlton for the conservatives.

Another angle to this club business which is often overlooked is their value as art galleries. Tucked away in the privacy of club rooms are genuine treasures of art that many a collector would envy. To some art lovers it seems a pity that these collections are not generally accessible.

All the World's Akin in an English Pub



(1) The ladies' bench. (2) Drawing a mug of ale. (3) The financier nudges the artisan in the common fraternity of the pub. Late afternoon is the time when these dingy saloons are crowded.

Upper Middle Class

The upper middle class tries to emulate the aristocrats by wangling invitations to the "exclusive" functions, attending balls, the opera, etc. However, they do have to "earn" a living, even if most of them are high officials in some company or another. And so they haven't time to keep their places in the social steeplechase. Being "in society" is a full-time job—one keeps his position largely by being seen in the right places at the right times.

On the whole, the lives of the Upper Middle are carbon copies of those of the very wealthy, with a few of the high spots missing.

Lower Class

The people who get the most real enjoyment out of life are those of the lower middle class. They can disport themselves in whatever manner they choose without worrying so much about what others will think, or whether their doings will become newspaper stories.

In the main, they work in the innumerable offices, factories, shops, and other commercial establishments in the city, and draw comfortable wages.

For amusement they go to the "movies," to the theaters, and to sports events like football, cricket, horseracing, greyhound racing, and boxing.

For relaxation they tend little truck gardens, stroll through the parks, and go for drives in the country. Not many of them own cars, because the cost (both original and upkeep) is too great. A small Ford V-8 retails for more than a thousand dollars in England. But they do have bicycles, and quite a few of them own motor bikes.

They enjoy playing outdoor games, too, particularly soccer and cricket, and any open stretch of flat ground is considered a suitable field. Tennis and golf are also popular—very popular, in fact.

East End Oddities

Among the East Enders you will come across some quaint vocations. Wherever a crowd gathers, particularly outside theaters, there flock the sidewalk entertainers. Some of them assume a serious pose, and in stentorian tones recite poems, passages from classics, and whatever, else they have managed to memorize. Their efforts are rewarded liberally when the hat is passed among the crowd. Londoners, like the old Romans, are fond of declamation.

There are the acrobats, some of whom will stand on their heads for incredible lengths of time, stolidly refusing to right themselves until they consider themselves justly recompensed for their performance, or until a bobby comes along with the inevitable command, "A' right, there, move along."

Almost everywhere you will find the inescapable "musicians" with their accordions, violins, cornets, harmonicas, and other broken down instruments. Some of them can really sing.

Sidewalk artists, a species peculiar to London, also demonstrate their talents for the patient "queues." Colored chalks seem to stick out all over them, and with these they draw creditable pictures on the cement sidewalks. They do portraits, landscapes, seascapes, still life, and whatever other type of drawing they may have mastered.

Coats of Mail, Wigs

Except for fancy-dress balls and masquerades, it would seem that there is little demand for suits of armor in modern times, yet there are in

Streets Are Narrow, Crowds Are Thick



Typical of "downtown" London is this snapshot, taken at 3 p.m. in Piccadilly Circus. Note the street sweeper in business suit and hat.

(Concluded on Page 10, Column 1)

PUBLIC DEMAND FOR DISCOUNTS BOTHERS HARRISBURG DEALERS

But Refrigerator Sales Far Above 1936 Brighten Picture for Dealers

By William H. Long

HARRISBURG, Pa.—Rising public demand for discounts on household refrigeration sales is beclouding a sales picture which averages 40% to 50% better this year than it did at the same time last summer, according to representative refrigeration dealers in the Pennsylvania capital.

Retail sales totals collected by the Pennsylvania Power & Light Co. for the Harrisburg area show that substantial gains were made in the first three months of the year. Figures are as follows:

	Jan.	Feb.	March
1937	97	125	298
1936	66	96	252

Sales by brands showed Frigidaire to be in the lead, with General Electric a close second, Norge third, and Westinghouse fourth.

DISCOUNT PHOBIA

Eliminating cut-price troubles caused by "chislers," of which there are comparatively few here, dealers say, many purchasers are taking the attitude that "anybody who pays retail list prices is a sucker." And it is this discount phobia in the public mind which dealers in Harrisburg consider a fly in the ointment of legitimate business.

"The trouble isn't lack of ready money, as it was last year," said Ross E. Stickel, sales manager for Harrisburg Home Appliances Corp., Westinghouse outlet. "Price in preference to quality is the main sales resistance we are meeting this year with the average purchaser."

"Most customers belong to the lower-income mass buying group, and they are out to get all they can for their money," he continued. "Their attitude is: why pay \$254.50 for one of our 7-cu. ft. models when they can buy the same size box for approximately \$50 less from a mail order house or from a 'friend-of-the-family' dealer who'll give a big discount to make a sale?"

TRADE-IN TROUBLES

The same opinion was expressed by O. B. Lank, veteran salesman for C. M. Sigler, Inc., one of several Frigidaire dealers in this city, who declared that price discounts and demands for high allowances on ice box trade-ins characterized general sales resistance this year.

Frigidaire dealers here have recently adopted a working agreement whereby the taking in of ice boxes on refrigeration sales has been banned and trade-in allowances for used mechanical units are set according to a scale of average resale values.

OVERSTOCK CLEARANCE

At J. H. Troup Music House, 56-year-old firm handling Kelvinator household refrigerators, N. A. Shoop, salesman, said that his company's main difficulty in making sales had been encountered earlier in the spring when several dealers with overloaded 1936-model stocks had cut prices drastically to clear their floors.

Allan Burche, proprietor of the Burche Co., General Electric outlet, stated that his year-old business had taken gratifying strides ahead thus far this year. Mr. Burche said lack of ready money was the principal item of sales resistance his salesmen were encountering with Harrisburg customers.

Three salesmen at W. N. Hall Electric Co., Frigidaire dealership—J. O'Connor, J. R. Mitchell, and H. W. Eyer—took a half hour off from their morning work to discuss the sales picture in Harrisburg, and agreed that demands for discounts

were the outstanding "customer trouble" in the city.

NATIVE FRUGALITY

From other Harrisburg dealers it was learned that this idea of "get all you can for your money" has roots in the native frugality of the Pennsylvania Dutch population which makes up a considerable part of the buying group in and around the Pennsylvania capital.

Most of these people are prosperous farmers and small merchants, uniformly sold on the need for mechanical refrigeration and willing to buy, but wary of the trend toward higher prices on nationally advertised lines and still leaning toward their old stand-bys—mail order houses—where they have done most of their buying all their lives.

As one dealer put it: "If they can get a salesman to come down as little as \$5 on the price of a box, they consider it a personal victory over big business and what they feel is a rank waste in big advertising programs, which reflects in higher prices to the customer."

SALES UP ANYHOW

Despite this condition, however, Harrisburg dealers are reporting substantial gains in sales for the first five months of this year over the same period in 1936. A city-wide dealer survey of sales for the first five months this year and last shows an average gain of from 40% to 50% over 1936. Relatively few outlets report drops or a static sales curve.

W. N. Hall Electric Co.'s five Frigidaire salesmen are a "night hawk" crew, closing 80% of the store's sales after 6 p. m. The policy of this outlet is to follow up floor leads to the prospect's home during the evening hours when all the family is home, away from the day's cares, and more willing to listen to a sales talk and observe a demonstration.

CASH SALES BETTER

Messrs. O'Connor, Mitchell, and Eyer stated that Hall's volume of cash sales has risen remarkably this year, averaging about 30% for the first five months of 1937. Mr. Eyer led the list with 31 sales during April, followed by William Ream with 29. This was the store's best month to date. Three of the five salesmen are B.T.U. Club members.

A similarly high percentage of cash sales was reported by Mr. Stickel at Harrisburg Home Appliances Corp., who said that about 35% of his Westinghouse sales had been "on the line" this year.

During the last two days of April, Mr. Stickel staged a sales drive in which his five men were offered cash bonuses of \$1 for the first sale they made, \$2 for the second, \$3 for the third, and so on up the line. This drive produced \$4,500 worth of business in the two days, declared Mr. Stickel, with H. G. Heisey, a Westinghouse 1,000-point man, winning.

CASH FOR PROSPECTS

Several Harrisburg dealers are sold on the efficiency of \$5 cash or merchandise awards to owners suggesting prospects later sold in producing sales. "Using the user" appears to be a well-established practice here, as is the policy of having salesmen call at an owner's home shortly after the sale is made.

Surrounding Harrisburg, in Dauphin, Cumberland, and Perry counties, are hundreds of prosperous farms and smaller communities to which dealers in the city direct much of their selling efforts. Here competition of selling against mail order

house lines is keen, many dealers report, and trade-ins of their models is remarkably high.

C. M. Sigler, Inc. encourages its Frigidaire salesmen by offering a suit to the man making the highest number of sales each month during the peak buying season. This firm specializes in musical supplies and obtains its prospects mainly from a customer list built up in 45 years of doing business in Harrisburg.

UTILITY PRAISED

Dealers in the Harrisburg territory of Pennsylvania Power & Light Co., the utility serving the eastern section of the state, are high in their praise of its "Better Today" contest for cooperating dealers on electric refrigerator, range and washer lines.

This contest, which has been going on since March 15, has produced keen competition among dealers in the 12 divisions covered by P. P. & L. A. A series of cash awards for salesmen and bonuses for the highest ranking division is offered.

J. H. Troup Music House reports that almost half of its 1937 sales have been made on ice box trade-ins while only about 7% of all sales have been taken in used mechanical units in trade. This store is now operating two Kelvinators in its show window with a single unit supplying cooling

for both. Much interest in Kelvinator's "plus power" feature has been aroused in this way.

RADIO USED

Allan Burche, owner of the Burche Co., G-E outlet, believes in outside canvassing as the best method of producing sales. Mr. Burche says his men spend approximately 90% of their time outside the store, where floor traffic is encouraged by the firm's extensive line of stoves and ranges.

Greater majority of dealers here use commercial "plugs" on the city's two radio stations—WKBO and WHP—as a medium of profitable advertising. Buying indices show homes with radios to be relatively high in the rural areas around Harrisburg, and special appeals are made to the "Saturday" trade.

Crosley Poster Promotion Piece Lists Line Specifications

CINCINNATI—A new four-color refrigeration promotion piece, designed primarily as a wall poster for Crosley dealers and distributors, has been issued by Crosley Radio Corp.

Illustrations and specifications of the complete Crosley refrigerator line are given, and features of Sheldor construction are stressed.

Oklahoma Utility Erects Demonstration Homes

OKLAHOMA CITY—Sales development method of Oklahoma Gas & Electric Co. is that of cooperating with local builders in construction of a number of properly wired and lighted homes, to be known as "Reddy Kilowatt" homes.

Electrically equipped according to specifications prepared by the utility's design engineering department, the homes are being built in an attempt to create an awareness of the insufficient lighting and appliance wiring facilities existing throughout the community, and to show the public the need for such facilities in every home.

The utility will place a Reddy Kilowatt sign on the front lawn of each home. Newspaper advertisements on these homes will be prepared by the sales development department whenever requested, and all such advertisements will bear the official Reddy Kilowatt trademark.

Upon completion of each home, Reddy Kilowatt cutouts and small signs will be placed to indicate each convenience outlet or other point of interest in the wiring layout.

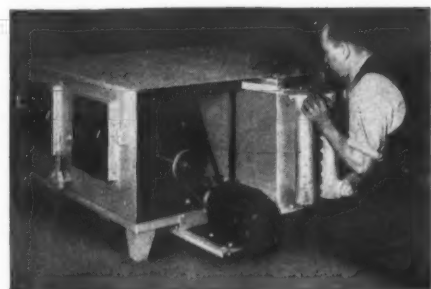
YOU CAN PUT YOUR AIR CONDITIONING ON A PACKAGE BASIS



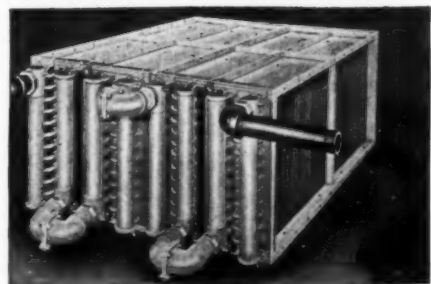
FEDDERS All Season

AIR CONDITIONING UNITS

Knock Down Sectional Construction makes it easy to get Fedders All Season Air Conditioning Units through narrow doorways and into limited installation space.



Removable panels provide access to interior.



A complete line of Air Conditioning Coils.

Fedders All-Season Unit Air Conditioners provide a self-contained unit ready to connect to refrigerant, cold water, steam or hot water supply. They are available in practically any combination for heating, cooling or both.

1. Lighter weight per capacity for easier handling and installation
2. Less space required per capacity thus simplifying layout of system
3. Air filters, cooling and heating coils, humidifiers and blowers balanced in capacity and performance to assure maximum efficiency with minimum field engineering
4. Fedders high efficiency ALL COPPER cooling and heating coils designed for correct distribution of refrigerant, cold water, steam or hot water
5. Compact manifolding minimizes space requirements
6. Fedders High Capacity Thermostatic Expansion Valves accessibly located on exterior for easy adjustment
7. Complete accessibility to entire interior of cabinet through removable panels gives quick access to filters, coils, humidifiers and blowers
8. Interchangeable parts for suspended or floor installations
9. Rustproofed construction throughout
10. Light, rigid frame reinforces entire unit . . . maintains alignment

Fedders All Season Air Conditioning Units are built in capacities from 3 tons up.

Write for Bulletin AC201

FEDDERS MANUFACTURING CO., BUFFALO, N. Y.
Atlanta Boston Chicago Cincinnati Dallas Los Angeles New York Philadelphia



"Every dollar counts in the restaurant business—and our electric bills have been much smaller since we installed our Copeland unit."

Hotels, restaurants, soda fountains, dairies—thousands of them everywhere testify to the trouble-free economy and efficiency of Copeland commercial refrigeration units.

Write for our Sales Plan

COPELAND

REFRIGERATION CORPORATION . . . DETROIT, MICHIGAN

American Products Are Liked



America is the only nation whose influence can be seen in rigidly insular London. American products (see "Shredded Wheat" advertisement on dray) are immensely popular, despite the "Buy-British" movement.

(Concluded from Page 8, Column 5) London one or two armorers still plying their old-world trade of making swords, shields, blunderbusses, and complete outfits of mail.

No doubt you have often wondered where those English judges get their marcelled wigs. Well, in the Inns of Court you can find a small shop, conducted by a chap who makes nothing but legal wigs, and he has an almost complete monopoly on the London market.

Odd Noises

Strange bedfellows are sheltered in all-embracing London, as you can see. To get on with a few more:

With ringing bells and wailing voices the last of the town criers walk the streets of the older sections of the city mourning out the time, the news, and the fact that all is, or is not, well.

"Sweeeeeeeeee!" This call of the wild, let loose at regular intervals in a deep, loud blast, announces the fact that there is in the vicinity a chimney-sweep.

Those independent entrepreneurs will, for a fee, poke long-handled brushes up the chimney of any house, and clean out the soot.

Although they are primarily and fundamentally scissors-grinders, those artisans with the piled-up push-carts undertake to put edges on knives, shears, lawn-mowers, and the like; and also to mend pots and pans, repair chairs, reweave cane chair-seats and baskets, and do other various and sundry small tasks. They yell, too.

Like the women of Java, London's muffin men carry their wares on their heads, a trick that requires years of practice and steady nerves. With their trays of muffins balanced on their noggins, they tramp the streets, ring handbells, and brave the sporadic attacks of mischievous urchins and gamins. The children of the East End are adversaries not to be underestimated. More noise here.

Several of the residents of Penny-fields evidently don't put much stock in those new-fangled inventions known as alarm clocks, for they rely on "knockers-up" to arouse them in the morning.

The last of the "knockers-up" are

all in the same family, and when they die out London will have lost a picturesque clan. In the early a.m. they make their rounds, stopping beneath the windows of their paying customers, and waking them either by tapping the glass with long, light poles or peppering it with pea-shooters.

Legendary lore has an old man trying to sweep back the incoming sea with a broom. It just can't be done. But London has a few individuals who take advantage of Nature by sweeping the tide while it is on its way out.

They are the "mudlarks," and their job is to sweep the mudbanks of the Thames at low tide, and recover any articles of value which may have been washed ashore. They take their findings to the River Lost Property Office, where the rightful owners may claim them for a reward.

Patience is the word for the man in the rowboat anchored under Blackfriars Bridge. It is his duty to stand by until he sees somebody fall into the river from the bridge, whereupon he dashes out in his little boat and saves the diver from a cold, watery death.

Occasionally he arouses enmity by spoiling the efforts of some forlorn individuals who are bent on suicide, but it usually turns out that even the despairing ones are mighty glad to be rescued.

London's many warehouses are naturally infested with rats, which fact insures the employment of old-fashioned ratcatchers. They puff away on villainous clay pipes to smoke the critters out, and then they loose their terriers to do the killing.

Saturday being the Jewish Sabbath, the housewives of the Ghetto are constrained on that day to do no work. Since the houses must be kept clean, the laundry done, and the meals prepared, the "Shabbos Goys" (menial Christians) do the Sabbath housework for nominal fees.

London's only church bell foundry is situated in the heart of the Ghetto. It was in this workshop that the great bell of the Milan Cathedral in Italy was cast.

Bow Creek, a "lost village" tucked away behind the East India Dock Road, produces London's "scurfers"—small boys who wriggle and squirm their way into the boilers of ships

and scrape out the rust and accumulated corrosion.

Goldleaf is hand-fashioned by the goldbeaters of North London. They sit by their anvils all day and hammer away at a mixture of gold and skin until they have produced a strip of the finished product.

Although mosquitoes are not numerous in London, there is a crew of professional mosquito catchers who can be hired for garden parties to annihilate the insect pests, and thus make the afternoons more pleasant for the assembled sippers and gabbers.

Bathing Beaches

London actually has some bathing beaches right in the city. One, London Beach, is under the shadow of the Tower, and on hot days the perspiring Beefeaters, bundled up in their cumbersome regalia, look with envious eyes on the carefree youngsters splashing about in the Thames.

Another small stretch of beach and water, which dwindles even smaller as the tide flows in, hides beneath the wall of the great hospital at Gravesend.

One of the great favorites is the public beach on the Serpentine in Hyde Park.

Over in the East End, where opportunities to enjoy the beaches are very few, the younger children have adopted as a summer costume the cool bathing suit, in which they scamper about the streets, even as the gamins of New York's East Side.

One finds it difficult to imagine the reserved, conservative Britisher going nudist, but such is the case with several hundred Londoners, I heard.

On summer weekends they leave the city and go out to nudist colonies established on secluded farms out in the country, where they get back to nature in a deucedly, modestly proper sort of way. Absolute privacy is guaranteed, and in this seclusion the members of the colonies absorb their ultra-violet rays and whatever else it is that nudists do.

Educational Facilities

In its multitude of schools and museums and libraries London has afforded its citizens ample opportunity to acquire education, both formal and informal. At present, the schools are being moved from the congested areas of the city out into the residential suburban districts, and even out beyond the city.

In contrast to this movement of decentralization among the grade schools, London University, which hitherto has had its various colleges scattered all over the city, is being brought together onto the central site so graciously provided by the American Rockefeller Foundation.

The days of Dickens, when London's children were both neglected and exploited as sources of cheap labor, seem to have gone completely, leaving behind very few signs of regret on the part of Englishmen.

Children have now become the principal beneficiaries of the municipal government's efforts to improve London living conditions—notably in the program to increase the number and size of public playgrounds and parks. But there still is plenty to be done to make life more enjoyable for the youngsters of London.

Transportation

Continuous progress is being made in the matter of public transportation. When the "tube" (subway) was first laid, it was considered an epochal advance in London's transit system, which up to that time had consisted of doubtful street-cars, or trams, and top-heavy buses—with, of course, the various railroad branch lines meandering around the city.

Omnibuses were first used in London in 1829. For a time they were called "shillibiers" after George Shillibier, their sponsor. Later they were dubbed omnibuses because they were carry-alls; and the Londoner's love for contracting pronunciation brought about the dropping of the "omni."

Driving power was furnished by huge horses until the combustion engine was successfully introduced in 1899; and on October 25, 1911 (a date still celebrated), the last regular trip was made by a horse-drawn vehicle.

Latest innovation in transportation is the Diesel engine, experiments with which have been so satisfactory that before long almost all of the buses in London are to be equipped with this economical, oil-fueled type of

'Thruppence & Sixpence' Like '5 & 10'



Counterparts of the American "five-and-ten-cent stores" are to be found in the Woolworth chain in England.

motor. At present there are between 1,200 and 1,500 Diesel buses in use regularly on London streets.

Popularity of London's buses is indicated in part by the fact that every person in the city, according to the weighted averages, makes more than 200 bus trips per year. More than 6,000,000 passengers are carried during an average week-day; and over a period of a month the distance traveled by all of London's buses totals about 16,000,000 miles—equal to 640 jaunts around the equator.

Fares are quite reasonable, being two cents a mile, and a ride clear across the city from one side to the other costs about a quarter.

To the uninitiated, the various names on the signs posted on the buses are of almost no help in determining the vehicles' destinations. To interpret these signs for such passengers, men are stationed at the main intersections and terminals.

The longest possible ride on a bus within the city limits is the 25-mile trip from Camden Town to Reigate.

Along with the Underground Electric Railways, London's bus service has been managed by the London Passenger Transport Board, a body of six men and a chairman. This organization now supervises all of the public transportation services in the city.

The one man who is considered capable of handling London's bewildering complexity of vehicular services is Lord Ashfield, the chairman. He was born in England, but he was brought up from early childhood in the United States.

His experience in handling traffic he obtained while serving high posts in the traffic systems of Detroit and New Jersey. Following his American training he was called to London to become head of the Underground Electric Railways Co.

Secondary to the buses in the volume of street-level transportation are the trams, owned and operated by the London County Council (except in the farther suburbs).

Main stem for trams is the Victoria Embankment, along which 400 of them rumble every hour. Rush hours see a surprisingly orderly multitude boarding the street cars, at an average rate of about 500 per minute for the entire system. The total length of tracks is just over 200 miles.

Railway traffic is divided between the regular surface trains and the underground trains. Seven hundred miles of tracks are woven all over the area of Greater London, and these are dotted with more than 600 passenger stations.

Statistics taken for a recent year reveal that in that 12-month period more than 649,000,000 passengers used the local trains of London. This figure does not count the suburban traffic on the main lines.

To make these statistics easily visualized, it can be said that over five times the population of the United States ride metropolitan London trains each year!

Compared with the railroad track mileage, the 120 miles of underground rails for electrically driven London trains seems rather insignificant, but the daily passenger load on the "molish" trains averages approximately 1,750,000. Many of the 200 or so subway stations are equipped with escalators.

London's underground trains are divided into two systems, the District and the Metropolitan forming one, and the five "Tubes" the other. The difference between the two is that the former trains make more stops and are not very far below the surface, whereas the "Tubes" are so deep that elevators and escalators are needed.

Naturally, the "Tubes," being farther down in the earth and with less obstruction, travel at greater speed and over longer non-stop distances than the District and Metropolitan trains.

The east-to-west "Tube" is the Central London Tube, tunneled all the way beneath Oxford Street from Shepherd's Bush through Chancery Lane and under the Bank to Liverpool Street Station. Three of the "Tube" lines pass far below the Thames.

What is claimed to be the longest tunnel ride anywhere in the world is the 16.5-mile "Tube" zoom from Golders Green to Mortlake. The latter place is the location of the Oxford-Cambridge boat race finishing line.

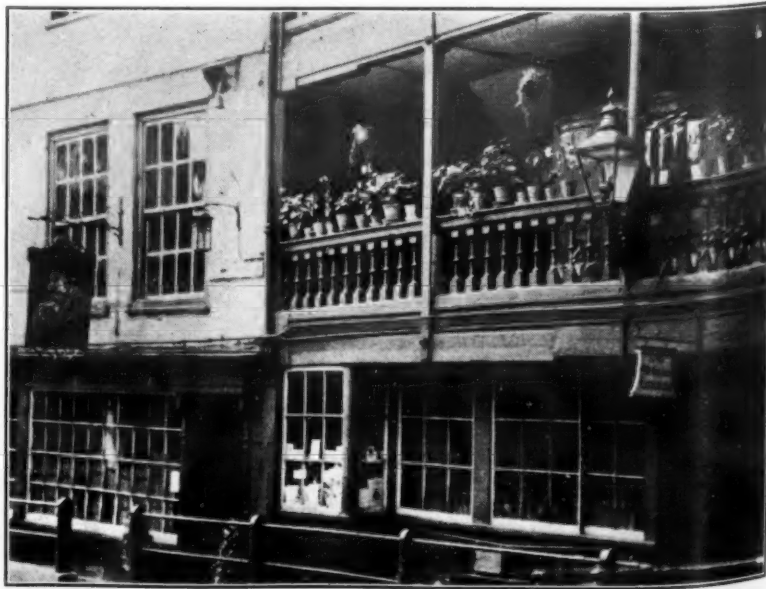
People from other parts of England never buy train tickets to a station called "London." They go instead to the various large stations established around the city. Of these terminal the more familiar are Paddington, Euston, King's Cross, Liverpool Street, Victoria, Waterloo, and London Bridge.

Young English Factory Workers



Leaving a London factory at the end of a shift, these youthful workers are "full of beans."

Olde-Tyme Inn



Preserved intact from the Eighteenth Century, the George Inn still operates at the old stand in London.

PROFITABLE SALES IDEAS

Series of Short Contests Plus Special Bonuses to Quota-Busters Prove to Be Sales-Builders for Memphis Dealership

MEMPHIS, Tenn.—Monthly and annual bonuses for quota-busters, augmenting the flat 10% commission paid to the eight salesmen of Wallace Johnson Co., has proved an effective stimulus to the firm's refrigerator sales, according to J. A. Leach, sales manager.

Sales stimulation created by this bonus system is heightened by series of short contests.

"The annual quota is set at \$15,000 for all men," Mr. Leach explained. "We don't believe in setting quotas on past performances or on percentage basis. We just set the quota high enough to make the average salesmen fight hard to reach it. Salesmen who exceed the annual quota are awarded an additional 2% commission on the year's sales."

"Monthly quotas vary according to the season of the year, but the same 2% reward awaits the salesmen who beat them."

"We have found this commission-bonus system very satisfactory, especially in making the men think in terms of better units and higher priced merchandise rather than in terms of unit volume."

"House sales are banned entirely," Mr. Leach declared, "for they have a detrimental effect upon the morale of the men."

Wallace Johnson's refrigerator salesmen are steady men, according to Mr. Leach, and sell a fair volume of merchandise the year around. In addition to refrigerators they also handle other appliances. They make no demonstrations of these, however, and get credit for them only when they actually close the sale.

Each salesman is permitted to card file 100 prospects. This file is checked daily so that any card filed will reappear at the end of 30 days. At the end of this period a salesman may refile this card if he has a good reason for wishing it retained and if his total number of prospect cards does not exceed 100. Most cards, however, are withdrawn from the file at the end of the 30 days.

Salesmen are not given separate territories, but may get their prospects anywhere. They do very little cold canvassing, working more on a "use the user" basis.

They rotate daily on floor duty, each man receiving credit for all sales closed on the floor during his day unless the prospect has already been filed by another salesman.

In other words, the salesmen get credit for their prospects regardless of who closes the sale. Mr. Leach believes that this plan keeps the men out in the field working rather than hanging around the store for fear a select prospect may be closed in their absence.

Another of the store's cardinal principles requires all salesmen to consider everyone they contact, regardless of whom it may be, as a potential prospect, and to ask that person if he would be interested in purchasing an electric refrigerator.

"By following this policy," Mr. Leach explained, "leads are obtained from the most unexpected places, for nearly everyone interested in home refrigeration. And we have trained

our men to realize that the only way to get an answer is to ask a question. The idea is simple but it certainly brings in sales."

Wallace Johnson Co. sponsors many contests of varying lengths, but has obtained exceptional results from short daily or weekly contests. For instance, when the home baseball team is playing in town, Leach frequently tells his men that all who have sold \$100 in merchandise by game time will be taken to the ballgame. All but one of the company's household refrigerator salesmen qualified for the opening game of the season.

Another sample of this brief but effective type of contest was offered with the advent of staw hat season. Mr. Leach promised a straw hat to every salesman who turned in \$700 in sales for the week. Five of the men had their hats in four days.

"It is not the amount of the prize," said Mr. Leach, "but rather some little personal thing that clicks with salesmen. The longer contests keep up rivalry and sportmanship for an extended period of time, but these little extra attractions keep the men fighting harder from day to day."

"Really the basic point of our sales system, however, is the 2% commission-bonus plan. The men have learned to make a good living on the 10% commission, and the extra two and two is like clipping coupons on investments."

As proof that the plan really works, Mr. Leach volunteered the information that his men sell more than 600 refrigerators annually, and that last year the unit price averaged \$190.

Salary Limits Best Men, New Manager Claims

YORK, Pa. — Abandoning the salary-plus-commission basis for paying salesmen, O. Roland Read, recently appointed sales manager of domestic refrigeration for Careva Co., Inc., distributor for Kelvinator refrigerators and York air-conditioning equipment, has instituted a straight commission basis with drawing account.

Three separate classifications are provided by the new plan. Class A covers salesmen whose estimated volume exceeds \$25,000 annually. Class B covers the volume range from \$12,000 to \$25,000, and class C applies to men with a volume below \$12,000.

Explaining the reason for this change, Mr. Read said that a nominal salary plus a small commission does not appeal to the better salesman, because it limits his earnings. He claims that the plan has been a producer of large sales in other fields and should work as well in refrigeration.

COAST-TO-COAST



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E. I. Du Pont de Nemours & Co., Inc.
THE R. & H. CHEMICALS DEPT.
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ARTIC—the preferred Methyl Chloride for Service Work

Dealer's 'Electrical Fair' Pushes Appliance Sales

WOODHAVEN, Long Island, N. Y. —To promote the sale of Kelvinator domestic electrical appliances, a three-day "electrical fair" was staged early this month (June 2-4) at the store of C. M. Perrin under the direction of E. A. Wildermuth, Brooklyn distributor.

Prepared on a Kelvinator electric range by Miss Eloise Budde, home economist of the Wildermuth distributorship, free food was served to all visitors.

Other Kelvinator appliances, including refrigerators, washers, and irons, also were demonstrated.

During April, a three-day cooking school was held by the Wildermuth organization at Rose furniture store, Astoria. On the first day, 525 visitors attended, though seating accommodations for only 300 had been prepared.

Star Furniture Co. Sponsors 'Cooling with Cold' Show

SCHENECTADY—In a "cooling with cold" demonstration sponsored recently by Star Furniture Co., Kelvinator dealer, Mrs. Nellie W. Gammon, home economist demonstrated how entire meals can be prepared in an electric refrigerator.

Crosley Advertisement Is Reprinted for Dealers

CINCINNATI—Crosley Radio Corp.'s Shelvador refrigerator advertisement, published in the May 22 issue of Liberty, has been reprinted in folder form and distributed to dealers.

Educating Prospect to Need of Appliance Is Better Policy, Kenosha Dealer Says

KENOSHA, Wis.—Education of prospects to the merits and advantages of electrical appliances, rather than high pressure selling methods or emphasis on price—this is the sales policy of R. F. Anderson, owner of Anderson Appliance Shop, Frigidaire dealer.

"Once you have convinced the prospect of the advantage of any appliance," says Mr. Anderson, "most sales resistance is broken down. That is why we forget about price until the customer presses us about it."

Mr. Anderson believes that in a city the size of Kenosha (approximately 50,000) it is wise for a dealer to concentrate on just one make of appliance, especially in refrigeration. He believes that in this way a dealer can do a better sales job and ultimately make more profit.

This year he selected one particular model on which the sales force was to concentrate its efforts. The model chosen was the \$232 Frigidaire, because Mr. Anderson believed that there would be less competition on this model. Seventy-five per cent of the company's sales this year have been on the selected model, and the average unit price of refrigerator sales has been \$215.

Anderson Appliance Shop employs eight solicitors who work mostly on old customers, doing no cold canvassing at all. Most of these solicitors rely upon store salesmen to close the sales. The store boasts of selling 95% of the people brought into the store for demonstrations.

"Adequate and efficient service has helped the store's appliance sales materially," declares Mr. Anderson, "for such service prompts a customer to come back again and again for other appliances. Many customers have even gone out of their way to give us leads in appreciation of this service," he states.

Although the company's finance paper is handled by an outside firm, Mr. Anderson has arranged to have all payments made at his store. In this manner he is able to maintain contact with all customers.

Pottsville, Pa. G-E Dealer Outfits Coach Trailer

POTTSVILLE, Pa.—To display General Electric household appliances Hummel's Furniture Co. has outfitted a coach trailer, first of its type in Pennsylvania, and will use it for demonstrations at the homes of prospects.

Winnipeg Utility Sets Up Model Kitchen Display

WINNIPEG, Man., Canada—Winnipeg Electric Co. is helping to promote kitchen modernization in its territory through a model kitchen display which has been set up in its appliance showrooms in the Power Building here. Special invitations to inspect the display have been extended to contractors and plumbing specialists.



What a difference in Sales TWO WORDS can make

"IT'S BONDERIZED" assures customers of greater satisfaction

Refrigerator dealers and salesmen are finding that Bonderizing is a good clinching argument. In addition to size, mechanical features, and fine appearance, protection from rust is a forceful closing appeal.

Buyers of iron and steel products are aware of the effectiveness of Bonderizing.

PARKER RUST-PROOF COMPANY, 2197 East Milwaukee Avenue, DETROIT, MICHIGAN



Ask for this Book

It shows what a salesman should know about Bonderizing, with charts and description of tests made on Bonderized metal. Arms you with vital sales facts that help close deals.

PARKER
Processes CONQUER RUST
BONDERIZING • PARKERIZING

THE MASTERCRAFT ADJUSTABLE PAD AND CARRYING HARNESS FOR SAFE DELIVERY OF AUTOMATIC REFRIGERATORS

Pad and harness ADJUSTABLE to many sizes and styles of cabinets. Economical—Efficient. Sturdily constructed, easily applied. Name of refrigerator attractively lettered on pad without charge.



Pad (Adjustable) \$9.50 ea.
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The Pad and Harness are separate.
Individual carrying straps \$1.75 each and up. Write for 1937 Folder & Prices on entire Pad Line.

BEARSE MANUFACTURING CO.
2815-3225 Cortland Street, Chicago, Illinois

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Rural Opportunities

ATTENTION of the engineers who attended the spring meeting of the A.S.R.E. at French Lick last week was focused on rural refrigeration.

Largely because farm income has been pushed so high during the last couple of years, sales organizations are becoming increasingly aware of the opportunity which lies in the cultivation of the rural market. And, as has always been the case in the refrigeration industry, when salesmen smell a new market, engineers go to work developing and perfecting equipment which will appeal to that market.

For more than a year editors of the NEWS have been aware of the increased interest in the farm market. Inquiries for kerosene-operated refrigerators have far outnumbered inquiries for any other type of equipment coming from readers of the NEWS. Hardly a week passes that subscribers do not write to ask where they can obtain a franchise for oil-fired absorption jobs.

Absorption Unit Franchises Seem Hard to Get

The answer has been, of course, that franchises for absorption refrigerators are scarce as C.I.O. agitators in the Union League Club. Only two manufacturers are marketing them in the United States: Electrolux and Perfection Stove, and neither one seems to be much interested in obtaining new sales outlets or in replacing any of those they do have.

At the A.S.R.E. meeting, however, it was brought out that absorption jobs are not necessarily the only answer to non-electrical refrigeration for farms.

Development of gasoline-engine-generators for compression units has been remarkable in recent

times, engineers asserted; and a number of authorities declared that the economy and efficiency of this type of refrigerator will now compare satisfactorily with that of the absorption job.

Rural Electrification Projects Lower Saturation Point

Rapid extension of rural electric power lines, it was also pointed out, is enlarging the farm market for electric refrigeration units at a rate faster than dealers are selling to this class of customer. In other words, the saturation of electrified farms probably has decreased within the last two years, rather than increased.

Even more interesting than the conversations on the sudden rise to prominence of the rural market, and what is being done to fulfill the promise of that market, were the formal discussions at the A.S.R.E. sessions of new farm refrigeration applications.

Refrigeration Helps Farmers Hold Out for Top Prices

For example: Truman F. Hienton of the Purdue University agricultural experiment station declared that special refrigeration installations—as well as the judicious use of large household refrigerators—are enabling growers to keep their produce until market prices are high. Said Mr. Hienton:

"A survey of 144 mechanical refrigerator installations on Indiana farms in 1935 revealed that 25% of them were storing some marketable produce, such as sweet cream, butter, eggs, poultry, or fresh meat.
"The cold storage capacity available for apple storage in New England in 1925 was about 1,600,000 bushels concentrated almost entirely in large cities, according to a recent report. This capacity had increased to 2,850,000 bushels by 1935, and the additional storage space, 1,250,000 bushels was located at country points.
"During the same decade there has been a somewhat similar increase, particularly in private cold storages, on fruit farms in the Middle West. Of 10 such installations made in Ohio, Indiana, Illinois, and Iowa during that time—four, located in Indiana have a combined capacity of 152,000 bushels, and four in Ohio a capacity of 135,000 bushels.

"The change which growers are making from common to cold storage is naturally of interest to refrigerating engineers since it involves the installation of refrigerating machinery and usually of insulation. Factors which are influencing the growers to make this change or install entirely new cold storages at their orchards are:

"1. Possibility of reducing labor at time of harvest.
"2. Increased return from the crop by more flexible marketing.
"3. Storage cost may be less than by commercial plant.
"One Indiana grower reported that he was able to realize \$1 per bushel for No. 2 apples by holding them in storage until the picking season was over, a return of 40 cents more than his competitors."

'Rural Storage Locker' Idea Grows in West

Roger Sprague of the Baker Ice Machine Co. outlined the "rural storage locker" idea, which seems to be catching on rapidly in the Far West.
Beginning with an ice plant

which rented storage facilities for poultry and game, so that these delicacies could be preserved after the hunting seasons had closed, the idea grew until a number of ice plants began building storage rooms with partitioned spaces to rent for the storage of meats and vegetables.

Farmers' associations have taken up the idea, and have erected refrigerated warehouses entirely devoted to locker storage. Mr. Sprague estimates that there are some 850,000 refrigerated lockers in use today throughout the country. Plants range in size from 150 lockers to 3,000.

Cold Storage Aids Grading of Produce

Mack Tucker of the Tennessee Valley Authority pointed out that refrigerated storage of farm products not only enables a farmer to hold out for the top prices, but also assists him in the grading of his produce. Best quality produce can be separated and stored to get the peak prices; lower grades can be sold at the market.

All indications point toward the development of many new types of equipment for sales to farmers within the near future. But in the meantime, the market is ripe for the sales of refrigeration products which are already available.

Bumper Crops, Full Overalls Pockets Expected by Fall

In addition to better prices, farmers are expecting better and bigger crops this season. They are buying now for cash; and should be in a position to spend plenty more by early fall.

It's an opportunity that few dealers can afford to overlook.

LETTERS

Comfort Cooling Guide In Next Week's Issue

Clarence E. Mange
5646 Waterman Blvd.
St. Louis, Mo.
June 4, 1937

Editor:

Kindly advise me the cost of a directory of air-conditioning unit manufacturers. CLARENCE E. MANGE
Answer: See below.

United Electric Motor Service
110 West Central Ave.
Boston, Ga.
June 8, 1937

Editor:

Advise us the name of manufacturers making low-priced electric fans for use in connection with air-conditioning equipment. JAMES C. GRAY
Answer: See below.

186 Old Orchard Ave
Toronto, Ont.
June 9, 1937

Editor:

I am interested in air-conditioning occupied buildings and would appreciate any information as to firms manufacturing air-conditioning equipment. J. R. BEDFORD.
Answer: See below.

Kent
Industrieel Maatschappij voor Koel en Transporttechniek
Koperstraat
Soerabaya
May 28, 1937

Editor:

Can you furnish us with the addresses of manufacturers of air-conditioning ceiling-fans and convection units with or without condensing units. Please inform us also who are making direct-coupled compressors for air conditioning. We are also interested in small air-conditioning units for bed cooling.

We ask that you omit the names of Frigidaire, General Electric, West-

inghouse and Carrier as all of these are already represented here.

INDUSTR. MV. KENT

Answer: See below.

The Osann Corp.
95 Liberty Street
New York, N. Y.
June 10, 1937

Editor:

Will you kindly mail me a list of all manufacturers making portable air-conditioning equipment for use in homes, and if possible, at the same time advise me in each case whether these manufacturers sell their product through appliance or department stores or direct to the public.

We would also like to have any literature you might have available issued by such manufacturers.

E. W. OSANN.

Answer: The Comfort Cooling Guide listing manufacturers of complete air-conditioning systems which include the cooling function, and manufacturers of component parts, will be published as Part 2 of the June 23 issue of AIR CONDITIONING AND REFRIGERATION NEWS.

The Guide will be 6 x 8 1/2 inches—a handy pocket size. The material appearing in this booklet will be incorporated into the Air Conditioning Section of the 1937 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Complete systems will be divided into two groups—year-around systems which cool, dehumidify, heat, humidify, clean, and circulate the air and summer comfort cooling systems. The summer systems will be subdivided into central station, remote floor, remote ceiling, self-contained room cooler, and portable room cooler types.

Parts, materials, and supplies will be divided into the following major classifications: air cooling and dehumidifying equipment; air circulating and cleaning equipment; measuring instruments; valves, fittings and tubing; controls; electrical equipment and drives; grilles and louvers; insulation; refrigerants; ducts, ionizers and ozonators.

The Comfort Cooling Guide will be sent to all subscribers of the NEWS.

Correction on Washington Code Hearing Story

Refrigerating Machinery Association
Southern Building
Washington, D. C.
June 14, 1937

Editor:

In reporting the Washington Code Hearing, the June 9 issue of the NEWS states that Ringgold Hart represented the Refrigerating Machinery Association. This is an error.

Mr. Hart represented the Merchants and Manufacturers Association of the District of Columbia, Southern Dairies, and the Chestnut Farms Chevy Chase Dairy. The Refrigerating Machinery Association made no representation at the hearing and was only unofficially represented at the hearing by me as an observer.

Also, the report states that one of Washington's department stores, Julius Garfinckel and Co., was represented at the hearing by Julius Garfinckel. Mr. Garfinckel died a number of months ago, and the store's views on the proposed code were presented by Herbert S. Ender, chief engineer. I know that you are anxious to have even the slightest errors in the NEWS factual reporting brought to your attention. My observation has been that errors occur so infrequently in your columns as to be almost noteworthy.

WILLIAM B. HENDERSON,
Executive Vice President.

Addenda to Article On Apple Storage

C. D. McLaughlin, M. E.
226 Kenilworth Ave.
Dayton, Ohio
June 12, 1937

Editor:

Referring to the correction to be made in the article on apple storages several lines were omitted which are quite important.

The correction should be made as follows:
On page 18 of the June 2 issue in column 4 the last two paragraphs should read:

"The control of temperature and humidity in apple storage refrigeration is very important and well known to the apple grower. For long-time storage, the dry-bulb temperature should be as close to 32° F. as possible for most varieties. For shorter storage periods the temperature may be held with safety at 34° F. to 36° F. and may even be held at 37° to 38° F. for certain species such as the Wealthy and the Jonathan. It is essential that the temperature be maintained within a very close range.
"The relative humidity (indicated by the wet-bulb temperature) should be held at approximately 85% . . ."

You may check this up on the copy you have and I would appreciate very much in having a correction made in the next issue. It makes quite a difference in the meaning of the paragraph.
C. D. McLAUGHLIN

'Around the World' Revives War Memories of England

Judson C. Burns
31st and Oxford Sts.
Philadelphia, Pa.

Editor:

I have been reading with keen interest your experiences as related in the weekly edition of the NEWS on your recent trip around the world. They have been very interesting, enlightening, and educational, will be sorry when these articles are discontinued.

However, the two articles about England, and London especially, interested me much as you recorded them in the May 26th issue, and June 26th issue. During the war part of my time, about six or seven months, was spent living in London near Victoria Station. The few pictures that you have in these two issues make me rather homesick for a trip back to dear old England. The No. 3 picture in the May 26th issue showing the country roads and the quaint houses make my heart long once more to walk down those quiet and very picturesque highways.

Maybe some day I will have the privilege of going back to England again under peace time conditions, at least I hope peace time conditions.

Copies of the NEWS still find their parking place on my desk and are used by nearly everyone who comes in and out of the office that is in any way associated with the refrigerator and electrical appliance business. They are well thumbed and well read. And sometimes articles of special interest to us here, and the copies in which they appear, I have a hard time to hold on to because they suddenly disappear. However, they are a benefit to us all.

Glad to hear you arrived back in America safely after such a wonderful trip around the world, and if you are ever down our way again we will always be happy to see you and have a few words.

With my kind personal regards, trusting you are in the best of health, I beg to remain,

ALBERT R. MATSINGER,
Store Manager, 1204 Walnut St.

Herman Goldberg Co. Is Manufacturers Agent

Herman Goldberg Co.
Manufacturers Representatives
9 South Clinton St., Chicago, Ill.
June 14, 1937

Editor:

I wish again to call your attention to the error in the item regarding my activities as shown in the last issue of AIR CONDITIONING AND REFRIGERATION NEWS.

My new set-up—that of the Herman Goldberg Co., is devoted exclusively in handling manufacturers' lines.

The Herman Goldberg Co. at the present time represents Anslu Chemical Co., American Injector Co., Ranco, Inc., Standard Refrigeration Co., and is active in selling to manufacturers and jobbers.

I believe, therefore, in line with the above, that the Herman Goldberg Co. may be classified as a manufacturers' sales representative.

HERMAN GOLDBERG.

Hits the Nail on the Head

The Eagle-Picher Sales Company
Temple Bar Building
Cincinnati, Ohio

Editor:

Thank you very kindly for the copy of the "Air Conditioning Surveys" that you have so kindly forwarded to me.

It is my desire to compliment you quite highly on the way this book has been compiled as well as to say that the information contained therein is quite valuable and should be a source of a lot of good information to persons interested in air conditioning or the allied industries thereto.

The remarks that you have beginning on page 42 and ending on page 44 are quite pertinent and certainly "Hit the nail on the head" when it comes to outlining what air conditioning does for the people using it.

DOUGLAS VIA,
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M. L. ROBINSON,
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Editor:

Thank you very kindly for the copy of "The Red Book—Master Catalog of Air Conditioning & Refrigeration."
J. ALDEN TOWN,
President.

UNCOVERING THE CONVENTION

NOTES ON THE A.S.R.E. MID-YEAR MEETING

BY PHIL B. REDEKER

Nearly Everybody Won In the Golf Tournament

Winner of the Kelvinator cup, emblematic of the A.S.R.E. handicap golf championship for 1937, was W. B. Clark of Mullins Mfg. Co.

Mr. Clark's achievement is all the more remarkable in light of the fact that he was playing under a severe physical and mental handicap. Driving on his way to the convention he blew a rear tire on a curve, the car being thrown off the road into a ditch and rolling over twice. Other than a small scratch on his head Mr. Clark had no visible injuries, but he was very badly bruised. Mrs. Clark, who was with him, also escaped serious injury.

H. B. Benson of Mullins Mfg. Co. was driving along behind the Clarks and picked them up and brought them along to the convention.

Lowest gross score in the golf tournament was made by L. J. Pitcher of Electrimatic Corp., who shot an 81-83 for the two rounds. At the A.S.H.V.E. meeting at Swampscott, Mass. late this month Mr. Pitcher will attempt to gain permanent possession of the Research trophy, since he has "two legs" on the cup at the present and needs win only one more time to win the trophy for good.

Mr. Pitcher's low score must be held a major feat, considering that his playing partners on his first round offered him very little inspiration. They were "Dick" Dawson of Fulton Sylphon and Karl Agricola of the Fredericksen Co. who had scores of 143 and 145, respectively, for the 18 holes, breaking Editor Taubeneck's all-time high score for A.S.R.E. tournaments established at the convention in Kansas City in 1931. Taubeneck, who gave up golf after that date, plans to enter next year's tournament to regain his crown.

Some of the golf tournament participants enjoyed real luck and won more than one prize. In addition to taking the Kelvinator cup, Mr. Clark won a candid camera and a multi-colored umbrella. Irv Knudson of Detroit Lubricator Co., runner-up in the tournament, won an electric razor and a set of cocktail glasses.

Other winners of major prizes in the golf tournament were Otto Klopsch of Wolverine Tube Co., C. J. Conkey of Servel, E. T. Williams, New York City consulting engineer; Fred Butler, A. W. Oakley, "Dick" Dawson, Cary C. Wilson, K. B. Thorndike of Detroit Lubricator, R. J. Thompson of Kinetic Chemicals, R. J. Quinn of Mathieson Alkali, and J. H. Kennedy of Sunbeam Electric Mfg. Co.

J. L. Shrode and A. B. Schellenberg of Alco Valve Co. left the convention with the congratulations of the members ringing in their ears for the excellent entertainment program which they provided. Other entertainment committee members are also deserving of mention, as is George Bright, who as usual helped run the golf tournament, but to Messrs. Shrode and Schellenberg goes the major share of the credit for working out a fine program and keeping it moving.

The list of donors of golf and other sports prizes is growing yearly so that almost every participant has much more than an even chance of winning a prize. Companies donating prizes at the recent convention included:

Aerofin Corp., Alco Valve Co., American Injector Co., Automatic Products Co., Baker Ice Machine Co., Carrier Corp., Century Electric Co., Creamery Package Mfg. Co., Cutler-Hammer, Inc., Detroit Lubricator Co., E. I. du Pont de Nemours & Co., Fedders Mfg. Co., Frick Co., Frigidaire division of General Motors Corp., General Electric Co., Henry Valve

Co., Jamison Cold Storage Door Co., Kerotest Mfg. Co., Mercold Corp., Mueller Brass Co., Ranco, Inc., Universal Cooler Corp., Vilter Mfg. Co., Westinghouse Electric & Mfg. Co., Wolverine Tube Co., Carbondale division of Worthington Pump and Machinery Corp., York Ice Machinery Corp.

Veterans Dominate the Tennis Tournament

The A.S.R.E. tennis tournament, dormant for some years, was revived at the convention, with about a dozen players taking part. J. F. Stone of Johns-Manville Corp. was the winner, taking a Parker pen desk set as his trophy.

The excitement in the tennis tournament, however, was provided by the sensational play of two gray-haired veterans, "Jimmy" Larkin, Century Electric's representative in New York City; and F. A. Eustis of the Virginia Smelting Co.

Sportswriters and fans can marvel at "Bill" Tilden's ability to keep playing good tennis after 40, but what about these two A.S.R.E. veterans, both of whom must be nearly old enough to be Tilden's father, who came pretty near running their younger competitors off the court with their speed and skill?

Mr. Larkin went to the finals, where he was beaten by Mr. Stone, but it must be said in all fairness that he had played his semi-finals match just before playing Mr. Stone, and otherwise might have given the champion a much tougher battle. Mr. Eustis was eliminated by Mr. Stone in the semi-finals in a hard-fought two-out-of-three set match.

Your correspondent, who once fancied himself a fair sort of a tennis player, found out how much he didn't know about the game when he was put out in the first round by Mr. Eustis. After the match, while we were still a-huffing and a-puffing, Mr. Eustis calmly informed us that he was more than double our age.

N. Y. Representatives Give Ken Newcum a Party

"Dick" Townsend, eastern representative of Detroit Lubricator Co., told us of a farewell dinner which was given by a number of manufacturers' representatives for Ken Newcum, who is leaving the post of Kerotest representative in New York City to join the Business News Publishing Co., publisher of AIR CONDITIONING AND REFRIGERATION NEWS, as head of the book department.

The dinner was held June 4 in the Village Barn in Greenwich Village, New York City. Those who attended in addition to Messrs. Townsend and Boone were Frank Haag of Fedders Mfg. Co., Al Fine of Kerotest, John Eldredge of Virginia Smelting Co., James Landrigan of the United Wire Co., and M. E. Miller of Peerless of America, Inc.

The sulphur smell emanating from the "Pluto water" wells for which French Lick is famous gave the engineers a chance to kid F. A. Eustis and E. W. McGovern about those "sulphur dioxide" leaks. The Plutonic odors, however, did really bring some unpleasant memories to McGovern.

In his undergraduate days at Lehigh, Ed was something of a wrestler, twice being runnerup for the 115 pound intercollegiate championship. But he was generally far above the weight limit, and was required to work out strenuously, diet, and drink Pluto water for a couple of days before a meet in order to get in under the limit, and thus the rueful memories.

The Wednesday night of the convention found one group of engineers discussing far into the night the rumors to the effect that some new refrigerants, said to approximate the theoretical ideal, are to be introduced. As can be well-imagined, a most interested listener-inner in this discussion was "Tommy" Thompson of the Freon family.

Most-talked about of the supposed new refrigerants was NH₃, which was better described as dihydride of nitrogen. Some of the engineers had

heard tales of the wondrous properties of this new refrigerant, and one member of the group said he understood it was to be marketed under the name "Nohaz."

E. W. McGovern of the du Pont interests then told of another proposed new refrigerant, potassium noraphosphide. A manufacturing concern somewhat dubiously known as the Phido Mfg. Co. is the manufacturer of this refrigerant, Mr. McGovern averred.

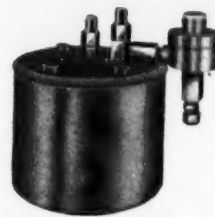
However, the validity of any of these new refrigerants became a matter of great doubt after "Dick" Townsend had told how he had "corned" some beef by treating it with NH₃.

The wives at the convention turned out in full force to hear E. B. Newill's talk on "Improvements in Household Refrigerators," and after the convincing talk and demonstration he made on the noteworthy advances that have been made in the past few years, we'll bet the pressure is on a number of husbands for the purchase of a 1937-model refrigerator.

Deane Perham was on hand but no one apparently could learn anything from him about the Chicago code, in which the Chicago Master Steam Fitters' Association, of which he is an official, is said to have a vital interest. The code meetings are said to be carried on behind closed doors, with some sort of an announcement supposed to be forthcoming in July.

H. C. Morrison and Ernest Gyax of the Curtis Refrigerating Machine Co. were in the St. Louis contingent at the convention.

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Frick Engineer Explains How Trawler Refrigeration Systems Cut Losses, Operating Costs

FRENCH LICK, Ind.—New fishing trawlers operating out of Boston have been equipped with mechanical refrigeration systems which have greatly decreased the percentage of the catch lost through spoilage, and which also have reduced operating costs, W. R. Kitzmiller of the Frick Co. told A.S.R.E. members at their convention here last week.

To preface his description of the refrigeration system in the trawler, Mr. Kitzmiller presented a highly interesting "background" picture of the New England fishing industry and some of its problems.

The Bay State Fishing Co. has the largest number of trawlers, and of their latest improvements he said: "Since the Bay State Fishing Co. handles the fish from the water to the retailer, and since it sells an advertised quality product, it quite naturally was interested in any development to keep the fish in first-class condition," said the speaker.

"But losses of product during the interval between the catch and delivery to the Fish Pier are high, sometimes 10% or higher in hot weather. In addition to this loss there was always a reduction in the amount of fish that could be carried because of the great amount of ice that must be included.

"The fishing banks of New England cover a distance of 1,200 miles from Boston. Georges Banks, which are the nearest, are 150 miles out. The Western Banks are located 500 miles from Boston and require 12 days for a round trip. In view of the territory to be covered and the perishableness of the product, speed in handling and proper methods of preservation are of prime importance.

SHIP CONSTRUCTION

"The boats used for the large catches of fish are known as trawlers, which fish mostly from the ocean floor. Their nets have yielded up to 25,000 lb. on one lift, and 350,000 lb. one trip. The trawlers are of steel construction.

"The trawlers carry ice in the holds to pack the fish as caught. The hold is divided into pens by wooden partitions.

"The catch is placed in the pens, alternating a row of fish and ice with supporting floor boards at regular intervals, to support the weight of fish and prevent crushing of the product.

"Use of ice for this purpose has been the only successful method; however, with the use of ice alone it has been necessary to use very large quantities so that frequently trips must be cut short because the ice supply has been used up.

"Usual practice in the older boats was to carry one ton of ice for each ton of expected catch. The water from the melting ice spread over the fish and the entire interior of the hold.

ICE DISADVANTAGES

"The wooden holds became water soaked and were difficult to clean so that they may have harbored bacteria which spread to the fish, causing more rapid spoilage. Although the holds were thoroughly cleaned, nothing was found fully effective in destroying the bacteria growth in the wood.

"As the ice melts bilge water collects in the bottom of the hold, and if it is not promptly pumped off, it will swish back and forth in a heavy sea, causing harmful air currents through the mass of fish and also possibly carrying bacteria from contaminated portions to the freshest fish.

"Early efforts had been made to refrigerate trawlers and entirely eliminate the use of ice. These had not proved wholly satisfactory, mainly on account of dehydration, freezing

of the fish nearest the coils, and other operating difficulties such as the collection of frost, leaky joints, etc.

"Instead of using direct expansion in the holds an air blast could be circulated in direct contact with the fish, but this method intensified the drying effect.

NEW TRAWLERS

In the new fleet of trawlers built for the Bay State Fishing Co., an effort was made to overcome the above mentioned difficulty, Mr. Kitzmiller explained.

"The fish hold was especially designed to overcome the disadvantages found in the old vessels, and consists of a well-drained compartment enclosed with nickel-clad steel and made perfectly water-tight," he declared.

"The hold is completely lined with this bright metal, thereby eliminating any chance of corrosion or contamination of the fish. This in itself provides not only sanitary conditions but permits more space and a much stronger construction than could be obtained with wood.

"The floor boards and pen boards are all removable for disinfection and cleaning, and replacement if necessary.

"The bottom of the hold has a concrete floor sloped to the center, where grating covers a drain trough leading to a sump tank in the engine room. The drainage is pumped overboard. The elimination of the drainage water in the fish hold is very important. No bilge water is present to cover the lower fish.

"The slushing action of the water, which acts as a pump, pulling air in and out of the hold and through the fish, is also eliminated.

CAPACITY GREATER

"Weight of this steel hold is less than that of the old wooden construction, and permits an increase in fish handling capacity. The sides of the ship are insulated with three inches of corkboard, which with the aid of the refrigerating system, reduces the meltage of the ice so materially that these vessels need haul only one-third the cargo of ice formerly carried.

"Use of ice is essential in maintaining the fish in proper condition. No other method has ever been found so effective in keeping the fish cold and preventing dehydration. It has been proved that a small meltage of ice is just as good as having a large quantity of ice water flowing over the fish.

"Thus the loading and handling of ice has been reduced to the minimum required for properly holding the fish. The refrigeration required is gauged entirely by the meltage flowing into the sump tank.

COLD AIR DUCTS

"There is a 3-in. air space between the nickel-clad lining of the fish hold and the corkboard insulation against the hull of the ship. This space, provided by the angle iron frames of the ship, is utilized for the air duct. Through it is circulated the stream of refrigerated air that aids in keeping the hold between 30 and 36° F.

"The bottom of the hold is insulated with 12 in. of granulated cork below the solid concrete floor, but an opening along the keel permits

the circulation of the air completely around the inner hold.

"Top of the hold also is insulated and is fitted with the air ducts for distributing the air to the sides of the hold. These ducts lead to the main air-cooling unit, located above the fuel tanks. By locating the air unit at this place a minimum of space is lost.

"The entire room is on the opposite side of the cooling unit; hence, the refrigerating machine connections are very short and compact.

COOLING UNIT

"The cooling unit measures 32 inches by 60 inches and is of the direct expansion finned type, with six rows of coils. A variable speed 5-hp. direct current motor drives the fan which at high speed delivers approximately 10,000 c.f.m. of air. The flow of ammonia is regulated by thermal valve control.

"The 4 inches by 4 inches combined refrigerating unit is operating at 310 r.p.m. with a 7½-hp. motor, with cover plate over air unit above. The machine develops 4½ tons refrigeration at 20 lb./in.² suction and 185 lb./in.² condensing pressure.

"The condensing water pump, handling 35 gal./min. of sea water, is driven by V-belt from the same motor that drives the compressor. The general practice has been to carry a light coating of frost around the inside of the hold which seems to keep the fish in the best of condition, though it had been expected the system would be operated without this frost.

"It is believed that this light coating of frost prevents condensation and flow of water along the sides which keeps the fish next to the lining from becoming soft. This is contrary to the original idea that air below 32° F. would freeze and injure the fish."

DUCTS SUCCESSFUL

An interesting fact, Mr. Kitzmiller stated, and one which confirms the value of heat transfer through duct work, is that the discharge air at temperature of 28° F. carries a temperature of 29 to 30° F. in the hold. This is based on outside air temperature of 40 to 45° F., and a sea water temperature around 38° F.

"It is expected that these temperatures will increase during extremely hot weather, even though the compressor is operated at top speed and the full quantity of air is circulated," said the speaker.

"The continual opening of the hatches for loading later catches of fish, along with the warmth of the fish, will always prevent freezing temperatures except for a limited space in the bottom and nearest the sides.

"A coating of about ¼-inch of frost around the sides seems to indicate that a fairly constant temperature is being held. Thermometer readings fail to indicate much rise in air temperature anywhere in the hold.

REFRIGERATION LOAD

"The refrigeration load, based on previous ice meltage, provides the only check of capacity. The melting of 60 tons of ice in a trip of approximately 12 days means an average of 5 tons per day, or a daily refrigeration load of 5 tons.

"In most cases the ice is not entirely melted, since at Boston those rated as first-class fish are only those packed in ice. The new boats intend to bring in some ice, so that some-

where in the neighborhood of 4½ tons refrigeration is a fair average.

"Since the higher cold air temperatures have been discontinued slightly more coil surface will be installed in the future, which will aid in developing full machine capacity.

ECONOMY SHOWN

"The economy of the refrigeration system can be shown by the saving in fish. In many cases the new trawlers bring in a cargo that is all first-grade fish. A loss of 10%, or let us say 25,000 lb. of fish selling for three cents per pound, may represent \$750 on a single trip.

"The same amount of help is required with or without the refrigerating machine. The extra amount of oil to develop approximately 10 hp. 24 hours per day for 10 days at ½ cent per hp. is not very expensive. This total amounts to \$12 per trip, whereas 60 tons of ice cost at least \$200 when loaded on the boat.

"The new boats, of course, carry considerable ice, but even if they should carry half the original load and operate the refrigerating machine continuously, they save \$75 or more on ice per trip.

"The only additional overhead charge would be due to investment. The cost of all the improvements does amount to something; the older boats represent an investment of approximately \$180,000, whereas the new, with 50% more power, cost \$200,000.

"On the basis of 30 trips per year a saving of only \$650 per trip would practically pay the additional cost in the first year. The advantage of first-grade fish any time in the year probably increases the average saving per trip. This case, like many others in the handling of food products, indicates the practical necessity for refrigeration."

SECTIONS OF TRAWLER

These trawlers are divided into five main sections, it was explained. The crew's quarters are forward in the forecabin; aft the forecabin is the fish hold, next the engine room, then the officers' quarters, while the galley is above.

The galley proves to be a vital part of the boat. Once the trawler has reached the fishing grounds, each man stands two 6-hour shifts or more, and fishing is continued 24 hours a day until the catch is made. While there are three meals each day, everyone is welcome to a quick lunch at any time.

The galley is located on the main deck. It is furnished with a 100-cu. ft. refrigerator. The cabinet has Monel metal fittings and trim. A ½-hp. methyl chloride unit installed in the engine room is connected to the refrigerator above. The box has inside dimensions of 7½ by 2 by 6 ft. high and is insulated with 4 inches of corkboard.

Across the back of the box is a coil covering practically the whole side. This coil is of ¾-inch black pipe and is designed to maintain a temperature of 32 to 35° F. in the galley box.

These new fishing trawlers have an overall length of 144 feet 8½ inches, 131 feet on the water line, a beam of 25 feet, and a water-line depth of 13½ feet.

POWER SUPPLY

The main power unit is a 750-hp. Diesel engine, fully reversible, and equipped with cooling water pumps, strainers, coolers, lubricating and fuel pumps, and speed controls. It also drives a 30-kw. generator used when trawler is steaming or fishing.

The main auxiliary is an oil engine driven 80-kw. generator with 15 kw. exciter which supplies power for the trawl winch. Both of these engines exhaust through the new type Maxim silencers.

The other auxiliary equipment includes a standby 25-kw. engine driven generator usually used in port. In view of the great amount of electric power required on the boat, it is necessary to have ample generating capacity. There is also installed a 56-cell battery, floating on the power line, for further flexibility.

The electric load consists of a 5-hp. fish hoist for unloading the catch and various search lights and other electrical equipment such as the Fathometer, radio, etc.

The specially designed trawl winch motor of 100 hp. operates somewhat on the principle of the steam driven winch. The steady torque of this motor allows for the pitching of the ship and saves fishing gear and rigging from being subjected to tremendous overloads or damage.

For pulling in the net, at approximately 250 ft./min., a steady torque is developed which does not vary with load conditions.

Cordle Joins Janes Mfg. As Advertising Head

GREENSBORO, N. C. — H. J. Cordle, advertising manager since 1930 of Armour Fertilizer Works, Atlanta, has become associated with Janes Mfg. Co., manufacturer of porcelain meat display cases and coolers, in an executive capacity. He also will direct the company's advertising.

Before joining the Armour organization, Mr. Cordle was a member of the advertising department of the Raleigh (N.C.) News and Observer.

Commercial Refrigeration Is Shreveport Frigidaire Dealer

SHREVEPORT, La. — Commercial Refrigeration, Inc., handling household refrigerators, meat cases, and water coolers, has been appointed Frigidaire dealer here.



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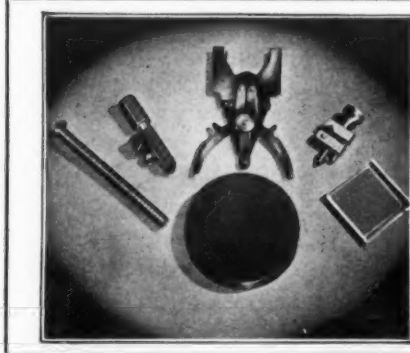
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Uses of Heat Interchangers In Commercial Refrigeration Systems Described by Knaus

FRENCH LICK, Ind.—What heat interchangers accomplish when used in commercial refrigeration systems was described by W. L. Knaus of the refrigeration engineering department, General Electric Co., at the final technical session of the A.S.R.E. convention here last week.

Mr. Knaus described the construction of the heat interchanger and its application, and gave tabulated data showing how it increases the refrigerating effect for a

system. In the discussion following the presentation of the paper, Mr. Knaus brought out the fact that the heat interchanger did not improve the operation of every type of refrigeration system; that it was not applicable generally in the case of ammonia systems.

In other cases, the superheating of the suction gases by use of the heat interchanger may reduce compressor efficiency, said Mr. Knaus. In some cases this will depend on the amount of clearance in the compressor.

D. D. Wile of Detroit Lubricator called attention to an additional benefit derived from the use of heat interchangers in that the sub-cooling of the liquid line prevents the "flashing" of gas at the entrance to the evaporator, and also reduces foaming in the liquid line. Such foaming, Mr. Wile pointed out, has a tendency to cut down the capacity of solenoid and expansion valves.

"Heat interchanger" might describe almost any of the various heat exchanging devices in a vapor compression refrigerating system, such as evaporators and condensers, but the term has come generally to denote a particular device in which the cold suction vapor from the evaporator pre-cools the liquid refrigerant flowing to the refrigerant control, said the speaker.

EFFECT ON CYCLE

"The arrangement and action of an interchanger in a refrigerating system are well known, the usual counterflow paths of liquid and vapor are usually employed, for with such an arrangement, the heat transfer

surface is used most effectively, the maximum subcooling of the liquid is obtained, and it lends itself to using the interchanger as a part of the suction and liquid lines," said Mr. Knaus.

"In an interchanger, the subcooling of the liquid decreases its enthalpy (total heat) so that each pound of refrigerant circulated through the evaporator produces an increased amount of refrigerating effect.

"Or, viewed physically, the sub-cooling decreases the amount of flash gas at the refrigerant control so that a greater portion enters the evaporator in liquid form.

"In passing through the interchanger, the suction vapor is warmed by the liquid, so that its specific volume is increased. Considering only these two factors, the subcooling of the liquid and the superheating of the suction vapor, any increase in economy of operation resulting from an interchanger depends upon the gain from the former exceeding the effect of the latter."

Table 1 was prepared to show some numerical data regarding the Freon-12 cycle with a heat interchanger. Conditions chosen for the tabulation are as follows:

1. Condensing temperatures of 80° F. and 110° F.
2. Evaporating temperatures of -10, 5, 20 and 40° F.
3. Liquid leaving the condenser subcooled 10° F. below condensing temperature, corresponding roughly to average conditions.
4. Vapor leaving the evaporator superheated 10° F. above evaporating temperature, corresponding approximately to operating conditions with thermal expansion valves.

Table 1—Data on Freon-12 Cycle with Heat Interchangers

Condensing temperature, °F.	80				110			
	-10	5	20	40	-10	5	20	40
1. Evaporating temperature, °F.	-10	5	20	40	-10	5	20	40
2. Temperature of liquid from condenser, °F.	70	70	70	70	100	100	100	100
3. Enthalpy of liquid from condenser, B.t.u./lb.	23.90	23.90	23.90	23.90	31.16	31.16	31.16	31.16
4. Temperature of vapor from evaporator, °F.	0	15	30	50	0	15	30	50
5. Enthalpy of vapor from evaporator, B.t.u./lb.	78.42	80.20	81.90	84.17	78.42	80.20	81.90	84.17
6. Refrigerating effect without interchanger B.t.u./lb. circulated	54.52	56.30	58.00	60.27	47.26	49.04	50.74	53.01
7. Maximum possible superheat temperature of suction vapor at interchanger outlet, °F.	70	70	70	70	100	100	100	100
8. Liquid temperature at interchanger outlet with vapor superheat as given by (7), °F.	26	35.4	44.8	57.4	37	46.5	56.0	68.6
9. Increase in refrigerating effect per lb. circulated, with liquid temperature given by (8), %	18.7	14.2	10.1	4.9	30.9	25.3	20.1	13.8
10. Increase in volume of 1 lb. of suction vapor caused by superheating to temperature given by (7), %	17.0	13.0	9.6	4.7	24.0	20.4	16.5	12.0
11. Superheat temperature of suction vapor at interchanger outlet when heated to 10° F. below the liquid entering interchanger, °F.	60	60	60	60	90	90	90	90
12. Liquid temperature at interchanger outlet with vapor superheat as given by (11), °F.	32.3	41.7	51.1	63.7	43.3	52.8	62.3	74.9
13. Increase in refrigerating effect per lb. circulated with liquid temperature given by (12), %	16.0	11.6	7.6	2.5	27.8	22.3	17.2	11.0
14. Increase in volume of 1 lb. of suction vapor caused by superheating to temperature given by (12), %	14.6	10.6	7.2	2.4	21.6	18.0	14.1	9.6

5. Specific heats of Freon-12 at constant pressure taken at average values of 0.232 B.t.u./lb. °F. for the liquid and 0.146 B.t.u./lb. °F. for the vapor. These values are sufficiently accurate over the range involved to show the essential effects of an interchanger.

6. The effects of pressure losses in the interchanger are neglected.

Data for two cases are given: the first being that of a perfect interchanger in which the outlet vapor from the interchanger is superheated to the inlet liquid temperature, and the second that where the outlet vapor is 10° F. lower than the incoming liquid. The former can not be realized practically although a large interchanger might come close to so doing.

For the first case, item (9) shows the percentage increase in refrigerating effect and item (10) the percentage increase in specific volume of the suction vapor. Items (13) and (14) are the same quantities applying to the more practical case.

"Volumetric efficiencies of compressors are affected by the suction gas temperature. Success has not been attained in developing methods of predicting how the volumetric efficiency of a compressor will be affected by the temperature of the suction vapor.

"Factors which must enter are: the general type of machine, the size of cylinders, the arrangement of the gas passages, and the rotational speed. However, it may be said that the gain in economy of operation resulting from an interchanger is greater than the foregoing comparison would indicate.

"With the high-side case type of enclosed-motor compressor, the rate of refrigerant circulation is little affected by the suction temperature, so that gain in refrigerating effect is quite high.

"Heat interchangers usually consist of two concentric tubes and appropriate connections with the suction vapor flowing through the inside tube and the liquid flowing in the opposite direction in the annular space between the tubes. Sometimes just the reverse arrangement of liquid and vapor paths is employed.

"Interchangers are also made by placing the liquid and suction tubes side by side and soldering them together to obtain a thermal bond. In some cases they may be part of the evaporator structure. However, the concentric tube arrangement is the most common type employed.

"Special brass fittings are available which are very convenient for construction of interchangers in the field when an installation is made.

"Two straight lengths of copper pipe are nested together to form a concentric tube interchanger and the fittings are soldered at each end to provide liquid connections to the inner pipe. In this way the interchanger may be easily adapted to the size and type of installation and may be a part of the run of suction and liquid lines.

"In addition to the economy of operation, practical reasons often call for the use of an interchanger, of which the following are examples:

"1. A cold suction line, unless insulated, is prone to "sweat." A heat interchanger, placed close to the

evaporator, will raise the suction temperature enough to eliminate the sweating.

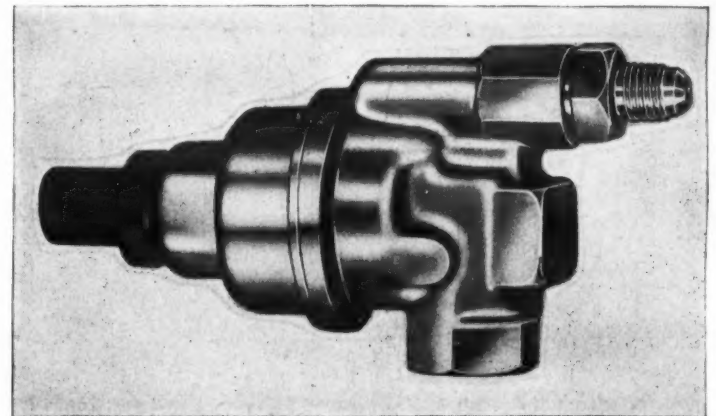
"2. A heat interchanger may function as a drier coil in preventing entrained particles of liquid refrigerant from being carried over to the compressor.

"3. A long suction line, unless insulated, may warm the suction vapor considerably if the line passes through an unrefrigerated space. It is better to let the warming of the suction vapor take place in a heat interchanger placed close to the evaporator."

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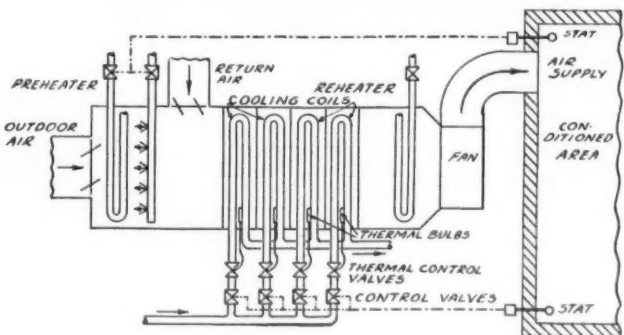
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| Carrier Corp.
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Manufacturing Company
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AUDITORIUM CONDITIONING CORPORATION
New York Office—17 EAST 42ND STREET

Air Conditioning Made Easy

By F. O. Jordan

Obtaining Performance Data on Parts Of Air Conditioning Unit

SECTION NO. 16 (Cont.)

Test Data

Air Conditioning Unit Data

Before a satisfactory air-conditioning unit can be designed, performance data must be obtained upon the various elements of which the ultimate unit is to be composed.

Motor data should include the same items listed above for the condensing unit.

Fan Data Should Include

- (1) Air delivery and power consumption at various speeds and resistance pressure.
- (2) Noise level.
- (3) Bearing temperatures and noises.
- (4) Rigidity of construction.

Coil Data

Complete performance data for the cooling and dehumidifying coil is very complex as there are a great many and complex influences upon coil performance, and a great many important considerations regarding desirable and undesirable characteristics.

As described in Section 3, the coil must present low resistance to air, refrigerant and waterflow, must free itself quickly of the moisture resulting from dehumidification, must not easily become clogged with dirt, and must show a high ratio of latent-to-total capacity without the necessity of using very low refrigerant temperatures.

In view of the above requirements, the following data must be obtained for the air-conditioning coil:

- (1) Resistance to airflow when doing sensible work only, and when doing latent work with airflow horizontal, vertically upward, and vertically downward.
- (2) Resistance to refrigerant or waterflow.
- (3) Moisture retained in coil at various airflow rates with airflow horizontal, vertically upward, and vertically downward.
- (4) Uniformity of refrigerant and water distribution.
- (5) Sensible and latent capacities at various temperatures and moisture conditions of entering air, at various air velocities, at various refrigerant temperatures, and at various water temperatures, flow rates and velocities.

When obtaining performance characteristics for the coil, it is essential that all conditions be held constant as stated above. The conditions which

must be held constant include the following:

(1) *Dry-bulb temperature of entering air.* This requirement demands that the heat input to the test room be held in constant balance with the cooling capacity of the coil under test and that the test room be well insulated so that changing outside temperatures will not influence the temperature within the test room.

(2) *Moisture content of entering air.* This requirement demands that the moisture input to the test room be held in constant balance with the dehumidifying capacity of the coil under test, and that the test room be provided with a moisture-proof lining so that the humidity balance will not be disturbed by changing rates of moisture absorption of the building construction.

(3) *Airflow.* This requirement demands constant fan speeds, hence constant voltages.

(4) *Refrigerant or water temperatures.* This requirement demands many things. Compressor speed and head pressure must be held constant. The rate of flow and temperature of condensing water must not vary.

The refrigerating unit must be located just outside the test room with the shortest possible suction line to avoid the varying influences which may exist with a long suction line which passes through areas of varying conditions.

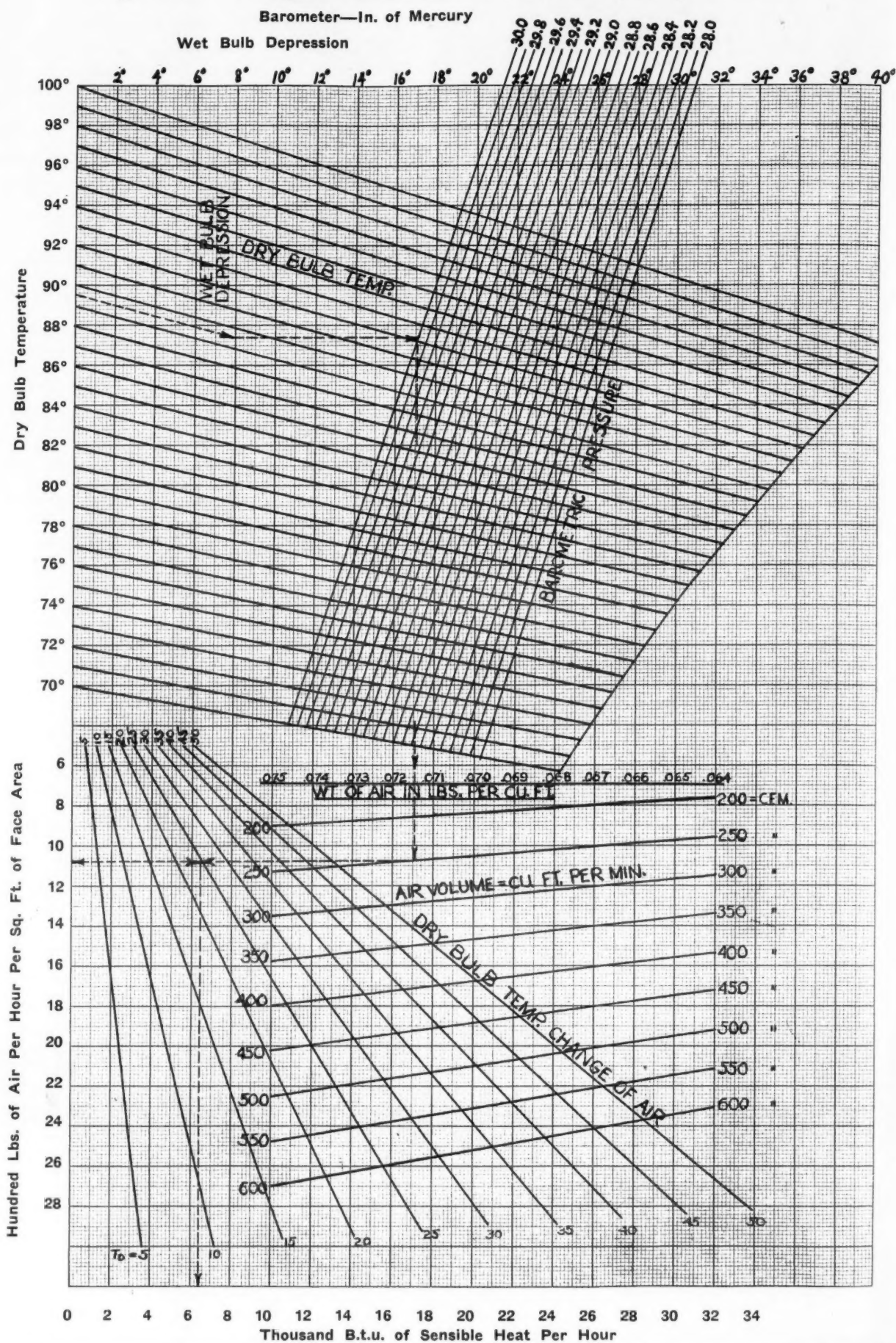
When the capacity of the refrigerating unit is greater than the load upon the test coil, its capacity must be reduced until it balances the load at the desired suction pressure and refrigerant temperature.

If only a small reduction in capacity is required, the reduction may be effected by throttling the suction line, or by reducing the condensing water rate to raise the head pressure.

However, due to difficulties which arise when either of these methods is used to excess, reduction in capacity of greater than 5% should be obtained by reducing the compressor speed, or by bypassing a portion of the high pressure discharge gas back to the suction line, as a constant refrigerant temperature is more easily maintained when the actual developed capacity of the condensing unit approximates the load. Before being bypassed to the suction line, hot discharge gas should be cooled sufficiently to prevent heating the crankcase.

In tests where hot or chilled water is being circulated through the coils, of where water at a certain temperature is required for condensing water, it is of prime importance that the water temperature be maintained constant for the same reasons that a

Fig. 79—Weight—Sensible Work Relationship for Air



constant refrigerant pressure is mandatory for accuracy in the direct expansion test.

Usually the desired water temperature is obtained by mixing the hot or chilled water with city water. Under this arrangement it is very important that the city water connection be taken off of the same city water branch which supplies the water heater or cooler.

If this is not done, variations in pressure in the city water connection (Continued on Page 17, Column 1)

Fig. 79—Directions for use:

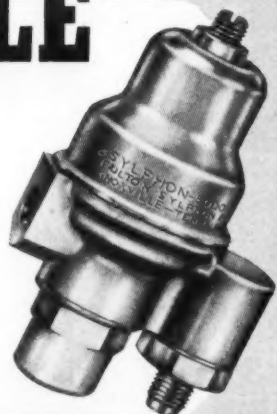
Start at given dry-bulb temperature at left-hand scale. Follow dry-bulb curve to wet-bulb depression. Move horizontally to barometric pressure. Read weight of cubic feet of air vertically below from horizontal scale at center of chart.

Move vertically downward to given air volume curve and read from vertical scale at left side of sheet the resultant weight of air per hour.

From lower scale vertically below intersection with dry-bulb temperature change of air, read sensible work done per hour.

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GATES BELTS



Figure 1

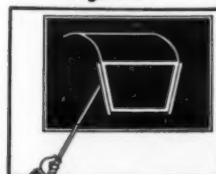


Figure 2.

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Standard Conditions for Running Tests On Air Conditioning Coils

(Continued from Page 16, Column 3)
and in the hot or chilled water connection at the unit under test will, of course, mean uneven mixing, which in turn will be productive of changing water temperature to the unit.

In addition to this, it is necessary to maintain a pressure throughout the system as constant as possible, in order to insure a constant flow rate.

If the coil is not completely "flooded," or filled with saturated refrigerant, the refrigerant in the tail end of the coil will be superheated. This operating condition is normal in the field.

However, it is virtually impossible to hold a constant superheat, so that superheat, if it exists during the test, introduces an undesirable variable. During the test for fundamental coil data, the coil should be flooded so that it shows no superheat whatever, and a "dryer" should be provided in the suction line to prevent flooding back to crankcase of compressor.

Only in this way may the refrigerant temperature be maintained at a known definite level, and dependable fundamental data be obtained. When the fundamental data is used in making up performance tables for the completed air-conditioning unit, suitable factors may be employed to account for actual field operating conditions.

All controls which are to be used for maintaining constant conditions must be simple, definite and easy to operate; otherwise unstable conditions will exist.

Conditions which cannot be maintained at standard must be corrected to the standard conditions. Wet-bulb readings should be corrected according to Fig. 78. Air quantities should be corrected to the barometer and wet-bulb depression according to Fig. 79.

In order to obtain a definite known basis upon which to determine data, it is very necessary that the actual refrigerant temperature within a direct-expansion air conditioning coil be accurately known. Unfortunately refrigerant temperatures within the tubing of an air-conditioning coil are

somewhat difficult to determine with the required degree of accuracy.

Furthermore if average temperatures are based upon entering and leaving refrigerant temperatures, the indicated mean temperature may be appreciably higher than the actual average because the refrigerant temperature gradient within the coil may increase slowly from the refrigerant inlet to a point near the outlet, where it may increase very suddenly due to a superheated condition which generally extends into the coil but a very short distance.

However, entering and leaving refrigerant pressures are easy to determine accurately, and may be used to determine average coil refrigerant temperatures without measurable error even if a few degrees of superheat exist at the leaving end of the coil, because of the fact that under such conditions, the superheated condition extends within the coil for so short a distance.

Therefore, the average refrigerant temperature within a direct-expansion coil generally may be determined easily and with acceptable accuracy merely by noting the saturation temperature corresponding to the average refrigerant pressure within the coil.

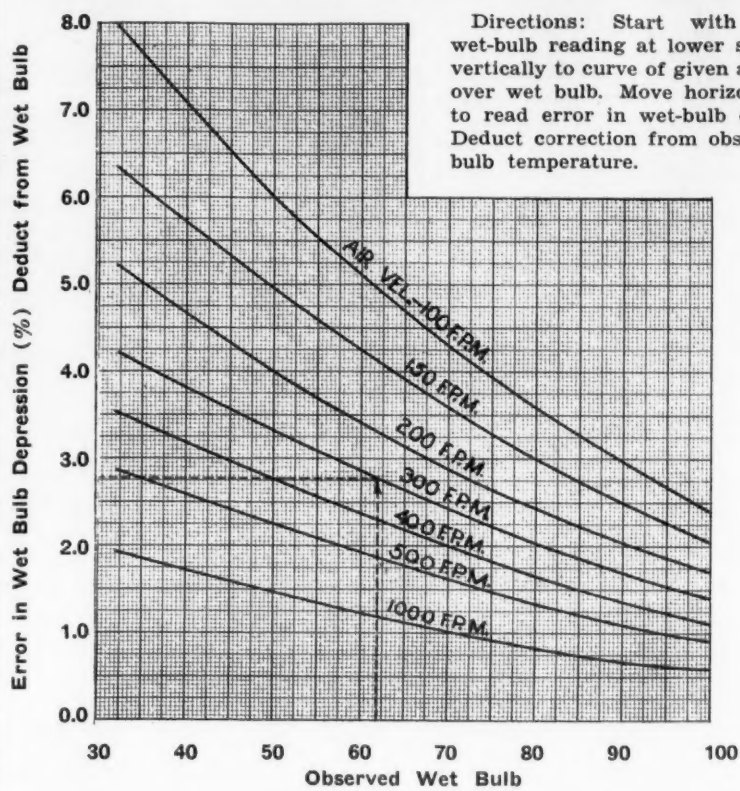
However, it must be remembered that the presence of oil within the refrigerant changes the pressure-temperature relationship. The saturation temperatures of various mixtures of refrigerant and oil may be determined from Figs. 80 or 81.

The percentage of oil in the refrigerant may be determined by drawing a known weight of the mixture into a container, allowing the refrigerant to evaporate, and weighing the remaining oil.

Generally, the percentage of oil which is mixed with the refrigerant will be 2% to 4% if the compressor is of a type in which the suction gas is not passed directly through the crankcase, or from 5% to 10% in the case of the compressor in which the suction gas is passed directly through the crankcase.

(Concluded on Page 18, Column 1)

Fig. 78—Wet Bulb Correction for Variation in Velocity



Directions: Start with observed wet-bulb reading at lower scale. Rise vertically to curve of given air velocity over wet bulb. Move horizontally left to read error in wet-bulb depression. Deduct correction from observed wet-bulb temperature.

Equation for Curves

$$E = \frac{1}{89} \left[\frac{(dh)^{0.79}}{(dt)^{0.675}} \right] - 1$$

Note: For reference to this chart, convert observed air velocities to equivalent Mass Velocity at 70° F.

Example:
 $V_{70} = V_1 \frac{459.6 + 70}{459.6 + t}$

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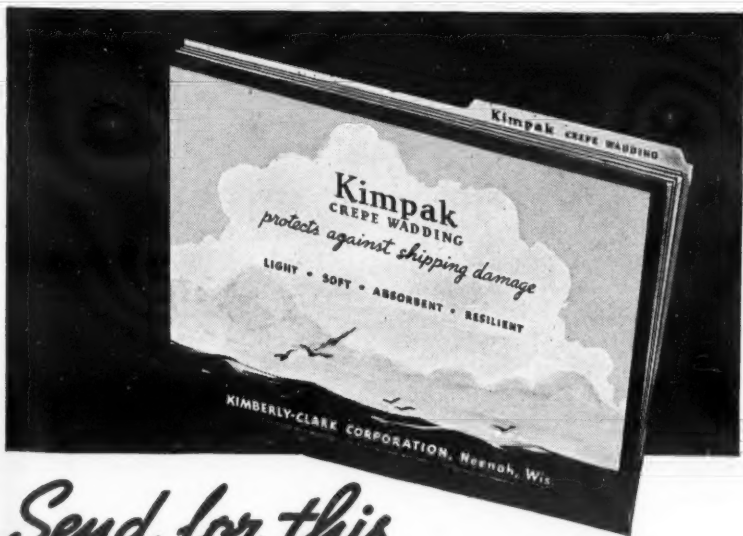
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Methods for Checking Capacity Ratings Of Air Conditioning Coils

(Concluded from Page 17, Column 2)

A sufficient number of technicians should be in attendance so that all readings are taken within a brief time, and the readings for each run should be taken in the same order and at the same rate.

Important readings such as entering and leaving air temperatures, and refrigerant temperatures must be taken practically at the same time, so that the leaving temperatures as read will be the leaving temperatures that actually existed at the entering air temperatures as read and at the refrigerant temperatures as read. A valuable supplementary backcheck

may be obtained by the use of suitable recorders.

Check Methods

The coil capacity should be taken in several ways for the purpose of "double checking." Methods which may be used are as follows:

Method A—Determine sensible capacity by multiplying the air delivery in pounds per hour at existing barometric pressure by the difference between the total heat per pound of air at the entering dry-bulb temperature, and the sensible heat per pound of air at final dry-bulb temperature.

Fig. 80—Saturation Temperature of Freon & Oil Mixtures

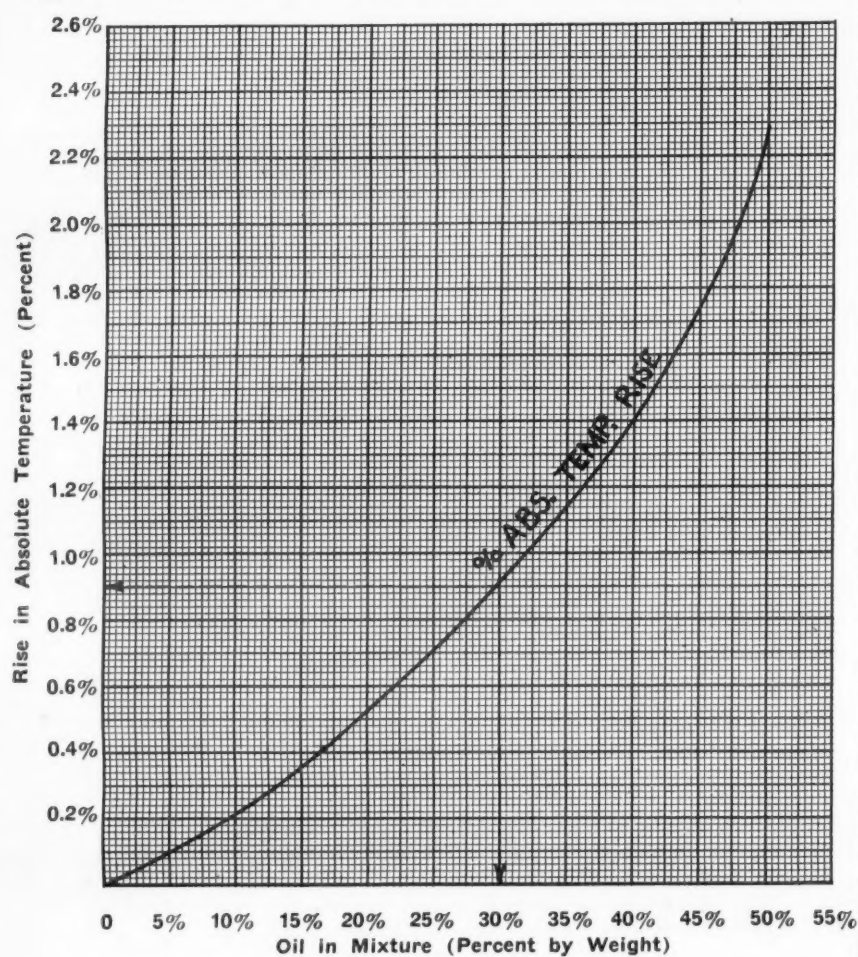


Fig. 80—This curve indicates percent of rise in saturation temperature (absolute) above saturation temperature of pure Freon, or mixtures of Freon and oil.

Computed Saturation Curves for Freon-Oil Mixtures

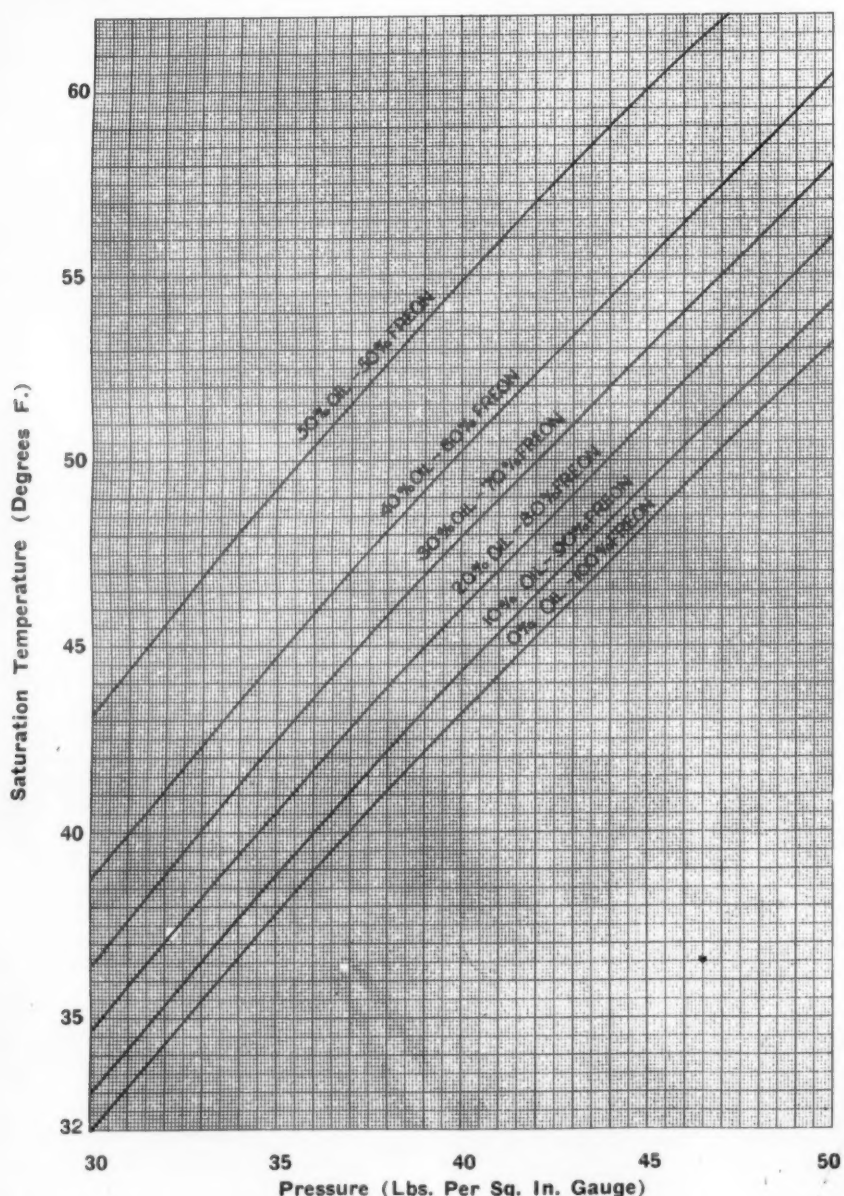


Fig. 81—These curves computed from Fig. 80. Percentages are by weight.

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Determine total capacity by multiplying the air delivery in pounds per hour at existing barometric pressure by the difference between the total heat per pound of air at the entering wet-bulb temperature, and the total heat per pound of air at the final wet-bulb temperature.

Determine the latent capacity by deducting the sensible capacity from the total capacity.

Thermometers for measuring air temperatures must be located so that they are shielded from radiant effect, and so that they are well swept by the air stream. Several thermometers should be used and the average taken, care being taken that all dry-bulb thermometers read within less than 1° of each other, and that all wet-bulb thermometers read within less than 1° of each other.

All thermometers should be calibrated against a standard thermometer, and all readings should be corrected accordingly. Wet-bulb thermometers should be corrected for air velocity according to Fig. 78 and the "sock" or wick should extend up the stem a distance equal to the submersion for which the thermometer is calibrated.

Barometric pressure has no influence upon the wet-bulb reading, although the total heat per cu. ft. of air is affected by barometric pressure. However, since the developed capacity depends upon total heat differences rather than actual total heat contents, the effect of barometric pressure upon total heat per pound of air generally is neglected.

Method B—Determine total capacity by measuring refrigerant flow, either by flow-meter or by calibrated receivers as described above. Since this method involves the use of considerable special equipment, and since it tends to render difficult the maintaining of constant refrigerant pressures and temperatures within the coil under test, it is not generally used.

Method C—Determine total capacity by noting the suction pressure, head pressure, and r.p.m. at which the condensing unit balances the air-conditioning coil, and by reading corresponding capacity indicated by performance chart for condensing unit.

This method requires the use of no special equipment whatever, and presents a fairly accurate and a very readily obtained check.

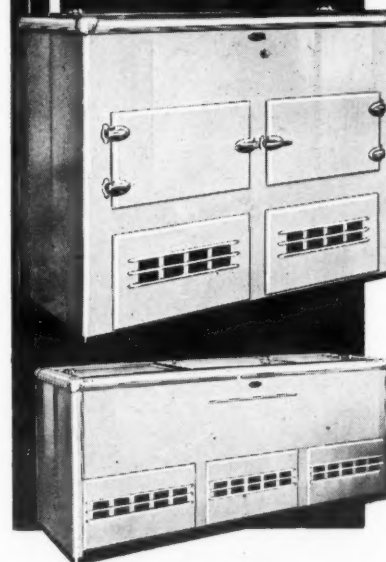
Method D—Determine the latent capacity by entraining and weighing the moisture resulting from dehumidification. The weight of moisture in pounds per hour when multiplied by 1,080 gives the approximate latent capacity in B.t.u. per hour.

In order to prevent re-evaporation of the condensate during the test run, it is necessary that the vessel containing the condensate be kept tightly covered except for the condensate inlet and a pinhole vent, and that the condensate pipe between the air-conditioning unit and the vessel be provided with a seal.

Method E—(For the chilled water coil only). Determine the total capacity by multiplying the pounds of water circulated per hour by the temperature rise of the water in passing through the coil. When taking water temperatures, it is quite necessary that proper thermometer wells be used.

The preferred locations for such thermometers is at turns in piping so that the well may project some distance into the water. Stem corrections must be made unless the submersion of the thermometer is equal to that upon which its calibration is based.

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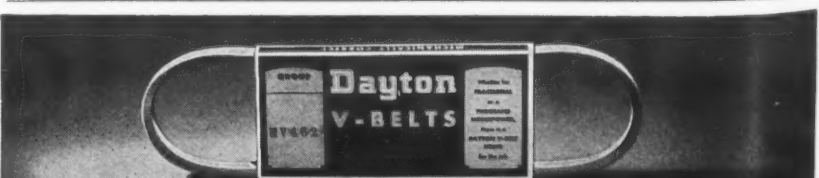


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(1) J. F. Stone (left) of Johns-Manville Corp., A.S.R.E. tennis champion, gets his reward from A. B. Schellenberg; (2) D. E. Perham, director of the refrigeration division of the Chicago Master Steam Fitters' Association and chairman of the Chicago section of the A.S.R.E., presided at the final session. (3) A. B. Schellenberg and J. L. Shrode of Alco Valve Co., who directed the entertainment program for the convention, summon a winner in the golf tournament to the platform. (4) Chester Lichtenberg,

who directs the activities at G-E's Ft. Wayne plant, enjoys his after-dinner coffee. (5) E. J. Kimm and George Postlewait, Kerotest Mfg. Co. representatives, at the banquet. (6) J. H. Dennedy of Sunbeam Electric Mfg. Co. and Mrs. Dennedy.

AIR CONDITIONING NEWS

Stern Franchises 15 New Carrier Dealers

HARTFORD, Conn.—Some 15 to 20 new air-conditioning dealers have been appointed by Stern & Co., Inc., distributor of Grunow household refrigerators and radios, and of Carrier portable air-conditioning equipment in New Hampshire, Vermont, Rhode Island, and part of Massachusetts.

The company recently held a three-day "open house" here to which dealers were invited to view the new Grunow radio line, which the distributorship will show again at the Boston Wholesaler's club at the Copper-Plaza hotel in Boston, June 22 and 23.

Prisoners Avid for Air Control Data

JACKSON, Mich.—Prisoner-students of the vocational school at State Prison of Southern Michigan showed so much interest in the Gar Wood air-conditioning equipment installed in the prison that R. A. Andree, the prison's director of vocational education, requested Gar Wood officials to send all available literature and data for the students' use.

40-Ton System Cools Chicago Men's Shop

CHICAGO—A 40-ton Freon system, using a Fedders coil connected to two 20-hp. condensing units, is employed to air condition completely Finchley's men's clothing shop here. Large super-heaters are used to obtain maximum efficiency from the machines.

Fred G. Wittenmeier, vice president in charge of engineering of Wittenmeier Machinery Co., designed the installation.

New York Appliance Chain Conditions 4 More Stores

NEW YORK CITY—Air-conditioning equipment is being installed in four more of the stores of Davega City Radio, Inc., radio, refrigeration, and sporting goods chain in the metropolitan New York area.

When these installations are completed, nine of the 30 stores in this chain will be air conditioned. The new installations are being made at 294 Flatbush Ave., Brooklyn; 5108 Fifth Ave., Bay Ridge; 278 Steinway Ave., Astoria; and 30 Journal Square, Jersey City, N. J.

Milwaukee Jobs Total 963 Hp. in 4 Months

MILWAUKEE — Air-conditioning installations requiring a total of 963.8 hp. were made in 16 local business establishments during the first four months of this year, according to figures compiled by the Marketing and Research Bureau.

1,698 Passenger Cars Newly Conditioned

NEW YORK CITY — Air-conditioned passenger cars placed in service by railroads and the Pullman Co. during the past six months totaled 1,698, bringing the total number in service to 7,846, according to J. J. Pelley, president of Association of American Railroads.

Conditioning May Control Next War, Doctor Says

WASHINGTON, D. C.—Air conditioning may determine the outcome of the next war if the fighting occurs in warm countries, according to an article by Dr. Clarence A. Mills, University of Cincinnati, published in The Military Surgeon. Dr. Mills declares that a soldier fighting in a tropical climate must spend eight hours a day in a cool room in order to fight at his best.

Vilter Freon Equipment Used In Topeka Theater

TOPEKA, Kan.—A 75-ton Vilter Freon compressor, supplemented by a 25-ton unit of the same make, was used in the air-conditioning installation recently completed in the Grand theater under the direction of F. E. Gross, Kansas City, Mo. engineer.

Ducts for the system were installed by Shehan & Degan, local contractor.

Illmo Installs Servel System In Columbia, Ill. Grill

COLUMBIA, Ill.—Illmo Refrigeration Co., distributor of Servel electric refrigeration and air-conditioning products in the East St. Louis, Ill. territory, has installed an air-conditioning system in the Columbia Grill here. Equipment includes a model WAM-750 Servel air-conditioning machine unit.

Gar Wood Outlet for Washington Named

WASHINGTON, D. C.—United Equipment & Supply Co. has been appointed distributor here for heating and air-conditioning equipment of Gar Wood Industries, Inc., according to Frank H. Dewey, general manager of Gar Wood's air-conditioning division, Detroit.

The new distributor has been authorized to sell, install, and service Gar Wood equipment in greater Washington, in Montgomery and Prince George counties of Maryland, and in Fairfax, Arlington, Prince William, and Fauquier counties of Virginia.

J. J. Beatty is president of United Equipment & Supply Co. Other officers are: L. LeRoy Gritzan, vice president, general manager, and sales director; and William E. Furey, secretary and treasurer.

Sales and engineering staff of the new distributor includes John T. Fisher, Arthur B. Viereg, W. S. Foresman, and Don D. Kneess.

Nevada Distributor Appointed by G-E

RENO, Nev.—General Air Conditioning Co. has been appointed Nevada distributor for General Electric air-conditioning equipment and oil furnaces. H. W. Beecher is manager, and L. T. Kearney heads the service and installation department.

Sales Meeting Room Feature Of New Rarick Quarters

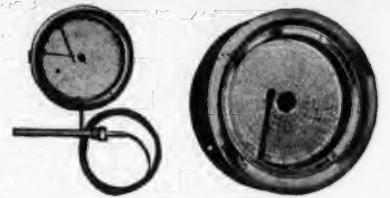
INDIANAPOLIS—K. A. Rarick Co., air-conditioning and automatic heating engineers, have moved to larger quarters at 2003 N. Meridian St.

The new quarters have been completely renovated, one room being specially equipped for sales meetings and demonstrations.

THE BUYER'S GUIDE

KEEP IT ON RECORD

—With MARSH recording gauges and thermometers



Write for Complete Information

Operating efficiency depends so much on the care with which temperatures and pressures are regulated that every modern installation calls for Marsh recording gauges and thermometers.

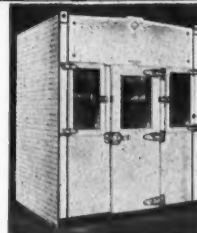
With recording instruments today's records become a subject for careful analysis tomorrow . . . and the improved performance resulting from this continuous check-up will easily repay the cost of Marsh recording equipment over a period of time.

JAS. P. MARSH CORPORATION
2067 Southport Ave., Chicago, Ill.

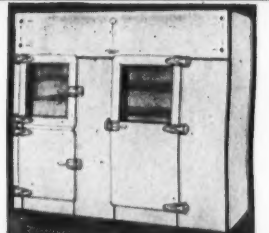
about Marsh recording gauges and thermometers. They are available in standard ranges for all applications and with bulbs suitable for all media. Multiple pen instruments can be used to record temperatures at several points or both pressure and temperature on one chart.

MARSH Refrigeration Instruments

DISTRIBUTORS WANTED



Percival equipment meets every requirement of the modern food store.

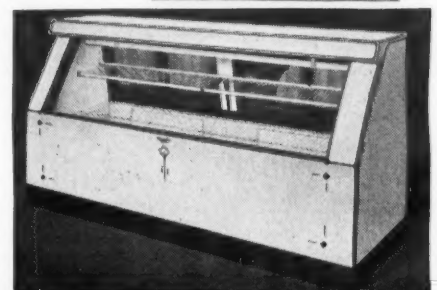


For mechanical refrigeration only

Percival's complete line will increase your sales of electrical refrigeration equipment and offer added earnings. Desirable territories still available. Write for complete information.

1886-1937

51 years of service to meat markets.



C.L. PERCIVAL CO.
DES MOINES, IOWA

Seepage-Proof FITTINGS

"Built Right to Stay Tight"

Every style and size of forged flared tube fitting for the refrigeration industry is available from standard stock at Commonwealth.

Thousands of semi-standard patterns enable us to quickly furnish any desired variation in pipe and tube ends.

Special fittings made to order.

Commonwealth fittings are correctly designed, carefully machined, and tube seats are protected in shipping.

25 years of service to the industry.

COMMONWEALTH BRASS CORPORATION

Commonwealth at Grand Trunk R. R.
DETROIT, MICH.

ASK
YOUR
JOBBER

— or write
TODAY for
BULLETIN 701

Ranco
INC
COLUMBUS, O.

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CONTROLS

MORE EXACT REPLACEMENTS
THAN ANY OTHER LINE!

THE BUYER'S GUIDE

GIBSON

Get Our Prices on Condensing Units

For All Commercial Purposes

1/4 H.P. to 15 H.P.

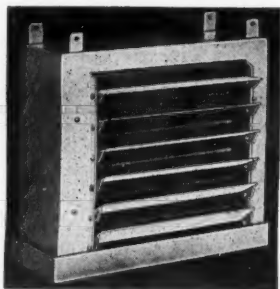
Air Cooled

Water Cooled

Gibson Electric Refrigerator Corporation

Greenville

Michigan



UNIT BLOWERS

Pipe Coils

Air-Conditioning Coils

FIN COILS

5/8" — 3/4" — 1"

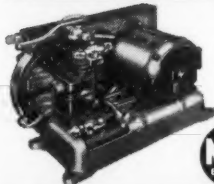
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REMPE COMPANY

340 N. Sacramento Blvd. Chicago, Illinois

REMPPE

FOR SERVICE REPLACEMENT & NEW INSTALLATIONS



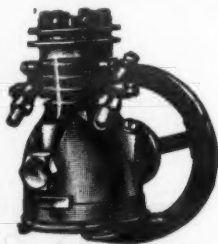
M&E Bare Compressors and complete units, available with or without motors and controls, meet every need of the Assembler or Service Company with high quality, moderately priced.

One, two and four cylinder models for SO-2, CH₃CL and F-12. 1/4 h.p. to 20 h.p.

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"CHIEFTAIN" QUALITY-BUILT COMPRESSORS and CONDENSING UNITS

All bearings diamond bored. Positive lubrication of parts by newly developed process plus forced feed lubrication in all models.

Sizes 1/6, 1/5, 1/4, 1/3 h.p.

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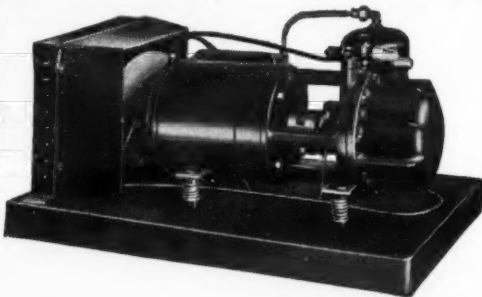
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Revolutionary New Oscillating Compressor!



A life-saver for manufacturers not making their own units! Here's the opportunity for Service Companies to save their customers money and give them a new up-to-minute unit at a lower cost than repairing the old one!

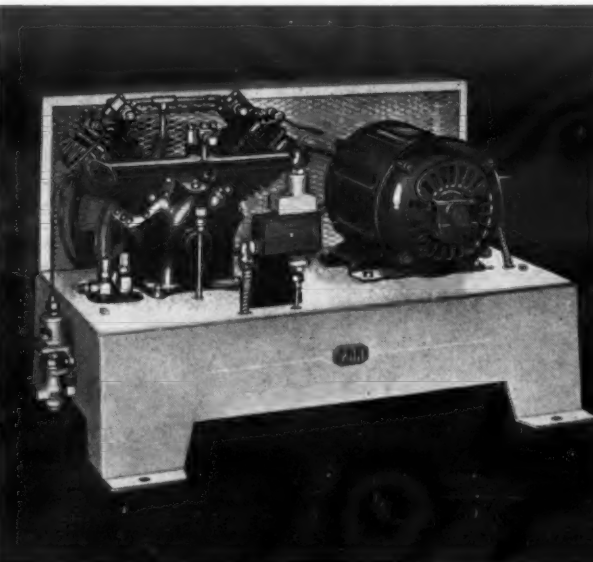
Write for Prices and Details!

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3700 E. Olympic Blvd.
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MILLS COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois



PAR WATER COOLED HIGHSIDES

PAR water cooled highside are made in ten popular models, 1/3 to 10 horse power motor size. Employing the most advanced engineering design for high capacity and long life.

Multiple cylinders of large capacity insure very low operating speeds. Sizes 1/3 to 1 horse power are two cylinder pumps. Sizes 1 1/2 to 10 horsepower are V type four cylinder pumps.

All water cooled models are equipped with finned tube and shell condensers, having a radiation surface of 25 square feet to each horse power. Large finned surface reduces water consumption.

A finned tube super heat remover is used between compressor and condenser, which reduces the gas temperature before entering the condenser, greatly increasing efficiency.

The water valves are rigidly mounted to the base, requiring minimum of piping. All units completely wired ready for installation. Motors equipped with cooling fans.

MODERN EQUIPMENT CORPORATION
DEFIANCE - OHIO - U.S.A.

Cooperation by Manufacturer, Dealer & Utility on Service Problems Asked by Fisher

CHICAGO—A plea for cooperation between manufacturers, distributors, dealers, and utility companies toward a more even distribution of the costs of servicing electrical appliances, especially ranges and water heaters, was made by R. E. Fisher, vice president in charge of public relations and sales of Pacific Gas & Electric Co., San Francisco, in an address at the fifth annual Edison Electric Institute convention here.

"The servicing of electrical appliances as an industry problem involves definite responsibilities to the manufacturer, the seller of the appliances, and the electric utility," Mr. Fisher said.

"An organized effort should be made to study and possibly re-define the responsibilities of service by the various groups of the industry. Within the past few years, conditions have warranted a change in the utility's service policy on electric motors, and in the domestic field we are, perhaps, in a transition stage wherein certain domestic appliances are now generally serviced by dealers—and yet others, particularly electric ranges and water heaters, are still serviced by the utility.

"Study should also be given to a re-definition of servicing. One phase of this should be considered as maintenance and repair work, which should be logically the responsibility of the seller of the appliances, whether dealer or utility. The other phase of servicing would be that work done by the utility strictly in the nature of servicing work, apart from maintenance and repair work.

"The industry should recognize the trend in appliance sales, appraising the extent to which dealers are becoming an increasingly important factor in the sale of various types of electrical appliances. The maintenance repair phase of servicing work now rendered by utilities should be proportionately less as good dealers become increasingly active in the sale of appliances.

"To bring about the desired results calls for united action on the part of both the manufacturer and the utility in developing the ability and efficiency of the dealer, through educational classes and experience in the field. Prescribed courses covering all phases of appliance servicing should be carefully prepared."

Guarantee Should Match Dealers' Service Policies

Mr. Fisher also urged that manufacturers give further consideration as to the intent of guarantees they offer on various types of appliances.

"Since the customer has every reason to expect that these guarantees will be fulfilled, either as they apply to the new appliance or to replacement parts, the guarantee period on the part of the manufacturer should be correlated with the dealer's and utility's servicing policies."

He also recommended, as of "distinct benefit," the coordination through one source of manufacturers' agents, sales, and service representatives with the various utilities' public relations, sales operating, claims, purchasing, stores, and account departments, on matters of operation, construction, service, and procedure.

A centralized office and field organization for receiving and ex-

cuting service calls would not only trim service costs, but result in more efficient servicing as well, Mr. Fisher declared.

After noting that refrigeration saturation is now approximately 41%, with 1936 sales 30% above those for 1935, and that electric range sales increased 50% during 1936, as did sales of electric water heaters, Mr. Fisher continued:

"As these saturations of electrical appliances increase, there is developing a major problem of servicing, and a rather heavy burden is being placed on electric utilities, to a point where servicing costs to the utilities are getting somewhat out of proportion to the comparative value of the business. This is especially so in the case of the electric range.

"Most utilities, I believe, have accepted a certain amount of this servicing work as their responsibility in the pioneering of electric load-building appliances.

"In the case of the electric refrigerator, many utilities purposely stayed away from direct merchandising because of their complicated mechanism requiring more or less expert attention. It was not long, however, before the manufacturers and distributors provided satisfactory servicing set-ups themselves through their marketing organizations.

Good Servicing Contributed To Refrigeration's Growth

"This servicing was in a very large way, I believe, responsible for the early acceptance on the part of the public of the electric refrigerator, and had much to do with the prompt correction of weaknesses that developed in the early models. Today we can almost place the electric refrigerator in the 'fool-proof' class.

"Progress along these lines with the electric range has been much slower, for many reasons. Competition with other fuels has been keen, and the cost of electricity has been, in many cases, high. Today, however, we find that this competition is much less serious, and we have rates for electricity that compare well with most all other competing fuels.

"In addition, with the national eye placed on electricity, I think we have a great many of the women becoming more and more desirous of the all-electric kitchen. The electric range lends itself to the modern trend in home building. It only remains for us to take full advantage of these sales opportunities with the right kind of promotional effort.

"It is not my intention to discuss sales, but servicing of appliances, which to my mind, plays such an important part in the development of electrical appliance sales that it should not be overlooked in any selling plan, especially in the case of the electric range.

"In some parts of the country, the utilities do no servicing whatever with electric ranges—all this work being left to the dealers. In other locations the utilities do all the servicing. In some locations the utilities do the servicing on annual servicing contracts, or make certain charges for materials and labor. There doesn't seem to be any standard way for handling the servicing of electric ranges.

"In the case of refrigerators, servicing has kept well up with sales and provisions have been generally set up so that the retail outlets take care of all trouble either themselves or through some agent of theirs with the least inconvenience to the customer and at reasonable cost.

"There is a tremendous market for electric ranges, the present saturation being less than 8%, so it appears quite important that all the elements entering into the promotion of this load should be very definitely coordinated.

"Most of the manufacturers give a one-year guarantee on electric ranges and electric water heaters and a one-year guarantee on subsequent parts purchased by the customer.

"While this guarantee seems to be quite sufficient to most of us, it nevertheless requires the utility to set up more or less complicated records to determine how long a range or a particular part has been in-

stalled, in order to know whether or not the customer is entitled to free replacement. Dealer sales are especially difficult to follow from this angle. It practically means that a record be kept of each part on the range.

"In our company we formerly kept a card record of each range installed on our lines with a complete record of all repairs noted thereon, which was posted from the range repairman's tags. This proved quite burdensome, so we have since adopted a system of attaching a small brass tag on all ranges installed on our lines, and similarly on all new range parts subsequently installed.

Brass Tags Tell Serviceman How to Charge for Job

"These brass tags show the date installed so that our range repairmen may be in a position to tell the customer without delay whether or not they are to pay for the part replaced.

"In case the part to be replaced has broken down during the period of guarantee, our men simply state that there will be no charge, and if the repairman has the right kind of element or part in his wagon stock (which he seldom has, on account of the great variety of appliances), he completes the job then and there to the entire satisfaction of the customer.

"It only remains for him to file a claim for a new part, which in itself is no small procedure, involving much paper work and the return of the defective part as proof of its having broken down, for the benefit of the distributor or manufacturer. The tag can also be adapted to other useful purposes such as marking correct lead wires and identifying parts removed for claims.

"The cost of records and paper work is quite an item of expense. I venture to say that very few of us know exactly just what it amounts to. The more direct item, however, that has most to do with running the cost of servicing up is the labor involved in the field.

"A thorough analysis of this work made in our company showed that of a total cost of \$117,000 for this work in 1936, 67% of the cost was for labor; transportation expense amounted to 18%, and material and supplies accounted for 15% of the cost.

"In addition to the \$117,000 spent in 1936 for servicing electrical appliances, we spent some \$192,000 in handling other ordinary servicing work, such as blown fuses caused by faulty electrical cords, overloads, etc.

"The electric refrigeration industry has done an outstanding job in establishing a servicing set-up through their marketing organizations. It is especially important and necessary that they have this very satisfactory servicing set-up because of the keen competition. The prospective buyer is very much interested in proper operation of the refrigerator and he has plenty of friends to turn to to learn what their experience has been.

"It seems to us that all concerned should bear an equitable part of the cost of servicing. How this can be accomplished is another matter. There are probably a number of ways that this could be accomplished, but inasmuch as the saturation of electrical appliances is rapidly increasing all over the country, it is very desirable that some plan be worked out so that a more equitable allocation of costs can be brought about.

"Our present policy is to furnish all simple repairs on electric ranges and water heaters without charge to customer for either labor or materials. During the period of guarantee we make all replacement of parts free of cost to the customer, subsequently obtaining the necessary part from the manufacturer by claim.

"After the period of guarantee we make a charge for all parts replaced at the regular retail prices—labor again being furnished free—and it is this labor item that is mounting each year.

The Utility Plans to Relieve Itself of Some Service Work

"From the customer's viewpoint," Mr. Fisher said, "it is not our intention of curtailing this service on electrical appliances in the least. Rather we think that there might even be a further extension of it. The problem as we see it is just how this servicing can be continued and perhaps improved but at the same time (Concluded on Page 21, Column 1)

Complexity of Service Problem Causes Utility to Request Manufacturer to Set Up Regional Service Stations

(Concluded from Page 20, Column 5)

relieve the utilities of these rapidly increasing costs for servicing.

"In one of our divisions, representing less than 5% of our customers, we are trying out a new policy, which if successful may be extended throughout our entire territory. The new plan has for its purpose the reduction of appliance maintenance costs.

"A study of range service calls showed that approximately 50% of the calls involved open coils in range elements, so in the territory where we are conducting this new experiment we are offering to replace these open coils by selling closed units to our customers, giving them a \$1.50 trade-in allowance per unit, hoping to replace as many of these open coils as possible.

"We are also paying a commission to range repairmen to induce them to sell the customer closed elements, and salesmen are paid a higher commission for ranges sold with closed elements.

"In this same division on all new ranges sold by the utility, we are telling the purchaser that we will maintain the range in good operating condition for one year from the date of sale; thereafter any parts that may be subsequently installed will not carry a guarantee, and a labor charge of \$1 per hour will be made for time on the premises.

"We have notified dealers that we expect them to maintain the appliances they sell during the first year of operation, or during the period of guarantee, replacing parts in accordance with the manufacturer's guarantee.

"If the dealer cannot give sufficiently prompt service the utility will make the repairs for the dealer on a time and material basis. The same arrangement will continue after the guarantee period.

"The electric range user must be considered first in any possible change of policy with regard to servicing appliances," Mr. Fisher declared. "When electrical appliances were first introduced," he said, "special inducements were required in order to consummate the sale.

"These inducements included promises of free servicing and liberal guarantees. This necessitated that the utilities provide adequate servicing organizations to back up the promises made by the salesmen, and to hold the business that had come on their lines.

"If we didn't do this servicing, it was evident that no one else would," he said.

"The result is that the customer still is looking to the utility to take care of his electric range troubles. Nothing has happened in the last several years to alter the situation except that manufacturers are turning out electric ranges very definitely improved in detail of construction. However, the electric range is still a long way from what we might call the 'fool-proof' stage.

"It has been our experience that dealers, especially the small ones, generally are not equipped to handle electric range servicing because of shortage of workmen, or delay in obtaining materials which are not carried in stock by them. Usually their records are not in proper shape to know whether or not the range has been in operation less than one year, and their charges for servicing are in many cases too high.

"To turn this work over to dealers without careful analysis of the situation will only serve to retard the progress of electric range sales and other electrical appliances. Dealers should, of course, have a personal interest in the sales made by them, which should include maintenance of the range in good operation during the period of guarantee.

"After the period of guarantee has expired, that same interest should be maintained by the dealer by the rendering of prompt and efficient service at a reasonable cost to the customer.

"We have a problem with price lists of parts. With 18 different standard makes of electric ranges, each firm with a dozen or so models having their own particular design and construction, you can imagine

what it means to quote prices to customers for parts embracing anything from an oven door handle to a complete new cooking top.

"It is not so bad from an individual manufacturer's standpoint, but when the utility has to quote prices for parts used on ranges for 18 different manufacturers, embracing hundreds of models dating back 15 or 20 years, you can get some idea of this problem.

"As far as the customer is concerned, we recognize the fact that the utility is probably in the best position to coordinate all these matters dealing with the proper servicing of electrical appliances.

"It is the natural and most logical way to handle the problem, especially during the pioneering period, but due to the increasing cost of this appliance servicing, coupled with continuous and regular rate reductions some relief has to be obtained.

"The mere fact that the utility has the facilities for giving prompt and efficient service should not be any reason for its bearing the cost of servicing appliances beyond a reasonable figure.

"Some of the major manufacturers have already sensed this servicing problem, and are establishing appliance servicing stations throughout the country under the general jurisdiction of service supervisors, who will become more or less acquainted with the situation that exists in the field.

"This is an excellent move on their part, and should serve to bring about a closer relationship between manufacturers, distributors, dealers, and the utilities on this very important matter."

Berner & Vallery to Handle Apex Line

DAYTON—Berner & Vallery, Inc., owned by Carl Berner and Charles Vallery, has been established here as distributor for the complete line of Apex appliances and A. B. gas ranges.

Berner & Vallery also operates the Troy Refrigeration & Radio Co., Troy, Ohio, and the Piqua Electric & Sporting Goods Co., Piqua, Ohio.

Mr. Berner formerly was connected with York Supply Co., Leonard distributor.

American Radiator Opens New Showrooms in N. Y.

NEW YORK CITY—The Sixth Avenue Association launched its "Sixth Avenue Rebuilt" project Wednesday, June 9, in conjunction with the opening of the combined showrooms of 14 companies of American Radiator & Standard Sanitary Corp. at 40 W. 40th St.

Speakers were Mayor F. H. LaGuardia, of New York City, Samuel Levy, president of the borough of Manhattan, and Ralph T. Walker, president of Architectural League of New York.

After the speeches, American Radiator & Standard Sanitary Corp. held a reception to mark the opening of "the world's largest showroom of building equipment."

2% Tax on Service Now Collected in Colorado

DENVER—Under the 2% service tax bill recently signed by Gov. Ammons and now enforced, Colorado refrigerator dealers must collect from every customer when service is sold. It is illegal for dealers to absorb the tax, but they are allowed 3% of the collections for expenses.

The purpose of the service tax is to collect on all retail transactions not tapped by the state sales tax, and the estimated annual revenue of \$3,000,000 will be used for relief work.

There is also a state 2% tax on merchandise, so that the dealer collects two 2% taxes in transactions involving both merchandise and service, except those with government agencies and charitable institutions, which are exempt.

New Test Kitchen for St. Louis Agency Equipped by G-E

ST. LOUIS—For equipping a combination kitchen and broadcasting studio located in the offices of Gardner Advertising Co. here, General Electric appliances were selected by Mary Lee Taylor, conductor of "Pet Milky Way" recipe programs, and home economist in charge of the Gardner kitchen.

Two G-6 Flatop refrigerators, an Imperial range, a dishwasher, and a Disposall are included in the kitchen-studio along with work surfaces, built-in metal cabinets, and conveniently located shelves.

With help secured through James & Co., Inc., G-E distributor here, from the G-E Home Service Institute, the kitchen was designed as a laboratory for creating and testing recipes as well as broadcasting them. Mrs. Thelma Reinke Lison is G-E home economist in charge of kitchens.

Miss Taylor frequently mentions her G-E appliances by name in her broadcasts, which are carried by direct wire to KMOX, St. Louis radio station, and released over the Columbia Broadcasting System network.

Though the kitchen is sound-proofed throughout and even ventilated by sound-proof air ducts, ordinary kitchen utensils are used so that listeners-in can hear a realistic clatter of pots and pans while Miss Taylor is demonstrating a recipe.

C.I.T. Branch Opened in Stamford, Conn.

STAMFORD, Conn.—C.I.T. Corp., national sales finance company, has opened a branch office here under the direction of E. C. Schuman, formerly with C.I.T.'s White Plains office.

S. J. Reynolds will continue to contact dealers and manufacturers in the Stamford area.

The local C.I.T. office will finance wholesale acquisitions and retail installment sales of automobiles and major household appliances for dealers in Greenwich, Darien, New Canaan, Norwalk, West Norwalk, South Norwalk, and suburbs.

Miami Dealership Forced to Move to New Location

MIAMI, Fla.—General Home Appliances, Inc., headed by Jack Webb, has moved to a new location at 32 N. Miami Ave.

The move was necessitated when it was decided to raze the Halcyon hotel building, former location of the appliance company, in preparation for construction of a new bank and office building.

New Peoria Store to Sell Fairbanks-Morse

PEORIA, Ill.—To deal in Fairbanks-Morse and Grunow household appliances, a new store managed by Philip Gordon has been opened here by Empire Home Appliance Co.

Gibson Distributor Increases Retail Store Space

DETROIT—Central Stores, Gibson distributor, is moving its Michigan Ave. retail store to larger quarters at Michigan Ave. and Junction St., according to H. L. Smith, general manager.

THE BUYER'S GUIDE

45 Cubic Feet of Storage Space!

... in this modern, gleaming white 6-door Model 650 Refrigerator. Sufficient shelf space for 21 cases of beverage in the three lower compartments, yet it occupies less than 14 sq. ft. of floor space.

Furnished with solid or glass type display doors in top section; 3" approved insulation, extra-height, re-tinned steel shelves, heavy chromium hardware, and your choice of DuLux or Porcelain finish. For GREATEST CAPACITY at LOWEST COST, investigate the Model 650. It's today's outstanding Refrigerator bargain!

GLOEKLER MANUFACTURING COMPANY
ERIC, PENNSYLVANIA
SALES OFFICE: 10 FOURTH AVENUE, PITTSBURGH



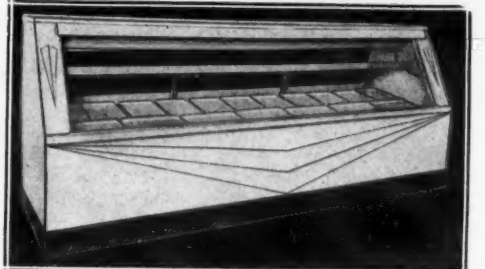
SINCE 1899

The quickest selling case on the market—made possible by its many exclusive features and a complete line. To obtain a large and profitable commercial volume

WRITE FOR DETAILS

FOGEL REFRIGERATOR CO., PHILA., PA.

LEADING WITH QUALITY



TYLER'S WELDED STEEL REACH-IN BOX

SALES SENSATION OF 1937

Big waiting market for food stores, restaurants, bakeries, tap rooms. New principle "Stratosphere" cooling. Maximum efficiency and capacity in small floor space. Dealers report tremendous demand. Big sales opportunity. Write today.

TYLER Sales-Fixture COMPANY
DEPT. EX. NILES, MICHIGAN



BIG PROFITS for DEALERS

Sell the New WINTER AIR SELF CONTAINED AIR CONDITIONED DISPLAY CASES AND REFRIGERATORS

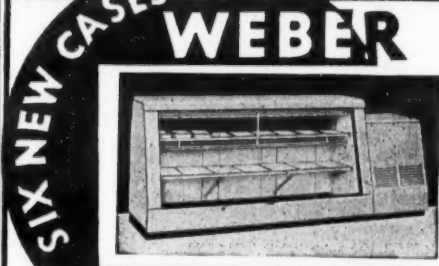
EQUIPPED WITH WESTINGHOUSE HERMETICALLY SEALED REFRIGERATION EASY TO SELL—EASY TO INSTALL.

WINTER AIR PRODUCTS CORP.



5 YEAR WARRANTY
MERCHANTISE MART CHICAGO, ILLINOIS.

SIX NEW CASES BY WEBER New Steps to PROFIT

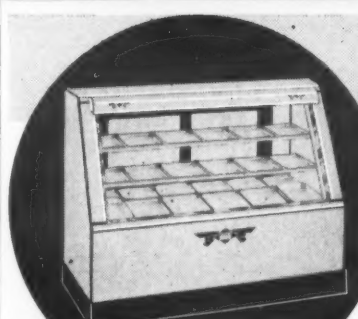


The most complete line of Refrigeration Equipment—New Streamlined Beauty—Unchallenged quality. Exclusive Territories Now Available—Complete Financing Plan.

Established 1902—

Cable Address: "WEBERCO"

Weber Showcase & Fixture Company, Inc.
5700 Avalon Boulevard Los Angeles, California



SHERER'S New Delicatessen Case

Restyled—improved—increased value—all significant features of Sherer's constant efforts to make SHERER Equipment easier to sell for its dealers and distributors.

Addition of this modern, fast-moving line of store equipment will bring added profits to you. Write for details about the Sherer Case and Cooler Franchise. Some desirable territories still available.



SHERER-GILLET CO., MARSHALL, MICHIGAN
Display and Storage Equipment for Retail Food Stores

MASS PRODUCTION MAKES THE KOCH ECON-O-CASE POSSIBLE

\$10,000.00 could not have bought as good a fixture as an Econ-O-Case a few years ago. Yet today, thanks to modern production methods, Koch has brought the cost of the new Econ-O-Case down to the very lowest price level.

The Econ-O-Case has a welded steel body, insulated with solid CORKBOARD, glazed with three panes of glass. It will display meat, keep meat, and sell meat PROFITABLY.

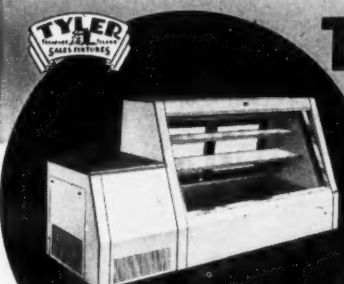
You need more information about the Koch Econ-O-Case.

WRITE KOCH TODAY FOR DISTRIBUTOR PROPOSITION

KOCH REFRIGERATORS

North Kansas City, Mo.
Export Dept., 304 E. 45th St. N. Y. City

THE BUYER'S GUIDE



TYLER'S
WELDED STEEL *Cases*

● 1937 line offers wide variety and sensational values. 6 big new features and iron-clad guarantee. Only Tyler gives one-piece "welded steel" construction, 100% insulation. Wonderful sales opportunity. Most talked of and fastest selling line on market. WRITE TODAY.

TYLER Sales-Fixture COMPANY
Dept. E, NILES, MICHIGAN

SIX BIG NEW FEATURES

RECEIVER TANKS—COMPRESSOR BASES—MOTOR MOUNTING BASES—AND OTHER STAMPINGS AND ASSEMBLIES FOR REFRIGERATION AND AIR CONDITIONING.

Our Receiver Tanks are made with drawn shells. Assembly by Hydrogen Brazing produces tanks chemically clean and free from dirt. Can furnish tanks painted if desired.

THE ACKLIN STAMPING CO.
TOLEDO, OHIO
Chicago, Ill.
Detroit, 2-165 Gen. Motors Bldg.

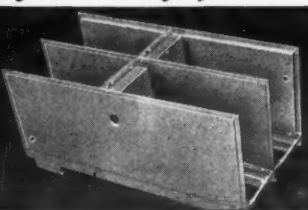
KOLD-HOLD ICE CREAM CABINET CONVERSION UNITS

Modernize old equipment... provide much greater storage space for packaged goods... eliminate brine leaks and attendant odors... reduce weight and simplify installation... require a minimum of service... provide ideal temperatures under all conditions... cost less to operate... quickly and easily installed in any standard cabinet at small cost.

Write for Complete Facts

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As Outstandingly Superior as the KOLD-HOLD System of Truck Refrigeration



HIGHEST **Filtrine** EFFICIENCY

**FILTERS & COOLERS
SURGE TANKS
STEEL PIPE COILS**

FILTRINE MFG. CO., Brooklyn, N. Y.

HENRY TYPE 866 *Strainer* SOLDER FITTINGS—Angle Type



For Copper Pipe

Screen can be taken out for cleaning without removing strainer from line. Negligible pressure drop. Large screen area. Light weight. Fitting sizes: 1/2" to 2 1/2" O. D. Furnished with 100 mesh Monel welded screen for liquid lines or 50 mesh screen for suction lines.

HENRY VALVE CO. 1001-19 N. SPAULDING AVE.
CHICAGO, ILLINOIS
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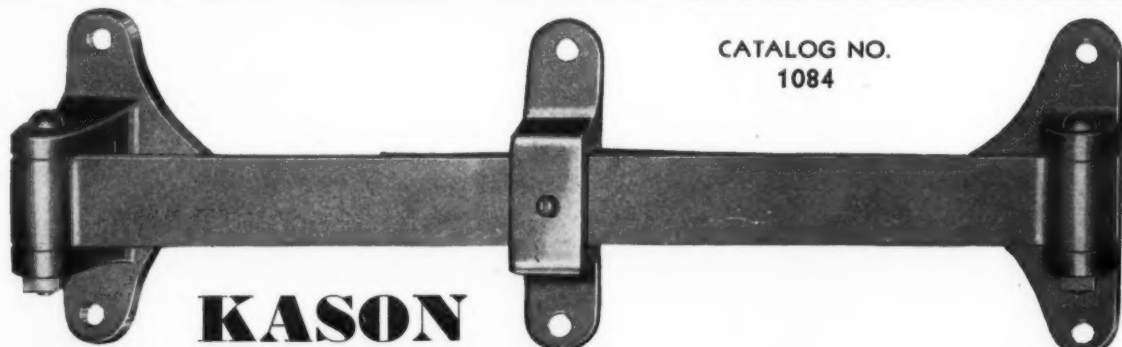
COMPRESSOR

PISTONS. Attach your blue print for quotation. Better pistons make better compressors.

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HOWELL, MICH.



KASON

Adjustable COLD STORAGE DOOR HINGE

This hinge and other items of special refrigerator hardware for cold-storage and freezer doors are featured in Section "C" of the new KASON Catalog No. 38 now ready for distribution.

KASON HARDWARE CORP'N., 127-137 WALLABOUT ST., BROOKLYN, N.Y.

PEI Booklet Describes Acid Resistance Test

CHICAGO—Porcelain Enamel Institute has published a new booklet entitled "Test for Acid Resistance of Porcelain Enamels" in which are described the room temperature test and the boiling test, both accompanied by complete instructions on simple methods of determining acid resistance.

The publication was prepared under the direction of the Institute's committee on test standardization, of which W. N. Harrison of the National Bureau of Standards is chairman.

Dayton Westinghouse Outlet Names Two Dealers

DAYTON—American Sales Co., Westinghouse distributor for nine counties, has appointed Nate Vradels, of this city, and The Variety Shop, of Mechanicsburg, as dealers, according to Theodore Goldenberg, manager.

Lloyd Stewart Heads New Bush Appliance Store

POINT MARION, Pa. — Lloyd (Shock) Stewart, for many years in the retail merchandise business here, has been appointed manager of the Bush Furniture Co.'s electrical appliance store, which was recently opened in the Crawford Building here.

Erlenmeyer to Represent Maas & Waldstein

NEWARK—Floyd M. Erlenmeyer, formerly engaged in the manufacture and practical application of industrial finishes, has been appointed western New York representative for Maas & Waldstein Co., maker of finishes. Mr. Erlenmeyer's headquarters will be in Rochester, N. Y.

PATENTS

Issued May 18, 1937

2,080,403. SHAFT-SEALING DEVICE FOR REFRIGERATORS. John L. Homan, Dayton, Ohio. Application March 14, 1936. Serial No. 68,845. 6 Claims. (Cl. 286-11)

2,080,444. TEMPERATURE REGULATING SYSTEM. Duncan J. Stewart, Rockford, Ill., assignor to Howard D. Colman, Rockford, Ill. Application Oct. 4, 1934. Serial No. 746,799. 4 Claims. (Cl. 236-91)

2,080,595. REFRIGERATING APPARATUS. William B. Anderson and Sidney C. Baker, Springfield, Mass., assignors to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Application Aug. 10, 1935. Serial No. 35,588. 5 Claims. (Cl. 62-116)

2,080,718. HEAT-CONTROL SYSTEM AND SWITCHING MECHANISM THEREFOR. Clifford Hotchkiss, Milwaukee, Wis., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. Application May 13, 1933. Serial No. 670,861. 17 Claims. (Cl. 200-138)

2,080,749. REFRIGERATING APPARATUS. Anthony T. Stock, Muskegon, Mich., assignor to The Brunswick-Balke-Collender Co., Chicago, Ill. Application March 7, 1935. Serial No. 9,704. 4 Claims. (Cl. 62-127)

2,080,781. DEVICE FOR COOLING AND DISPENSING LIQUIDS. George McKittrick, Independence, Kans. Application June 28, 1935. Serial No. 28,966. Renewed Dec. 31, 1936. 1 Claim. (Cl. 225-18)

2,080,836. PRESSURE OR LIQUID SEAL. Sylvanus C. Shipley, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. Application Sept. 10, 1934. Serial No. 743,377. 7 Claims. (Cl. 285-166)

2,080,885. COLD STORAGE CABINET. George W. Cocks, Upper Montclair, N. J. Application Oct. 29, 1934. Serial No. 750,561. 2 Claims. (Cl. 62-89)

2,080,892. CONTROLLING MEANS FOR REFRIGERATING APPARATUS. John Kirgan, Easton, Pa., and George H. Woodard, Phillipsburg, N. J., assignors to Ingersoll-Rand Co., Jersey City, N. J. Application Oct. 24, 1934. Serial No. 749,704. 12 Claims. (Cl. 62-152)

2,080,907. SHELF SUPPORT. John C. Buchanan, Detroit, Mich., assignor to Norge Corp. Application Aug. 13, 1934. Serial No. 739,592. 1 Claim. (Cl. 211-147)

2,080,950. TEMPERATURE-CONTROL DEVICE. Carl A. Otto, Milwaukee, Wis., assignor to Johnson Service Co., Milwaukee, Wis. Application Nov. 16, 1935. Serial No. 50,195. 7 Claims. (Cl. 236-1)

2,080,998. AIR-CONDITIONING APPARATUS. Robert T. Brizzolara, New Dorp, Staten Island, N. Y. Application Sept. 6, 1935. Serial No. 39,430. 19 Claims. (Cl. 62-133)

2,081,013. HUMIDIFYING APPARATUS. Clark T. Morse, Detroit, Mich., assignor to American Blower Corp., Detroit, Mich. Application May 7, 1935. Serial No. 20,139. 10 Claims. (Cl. 261-117)

2,081,025. REFRIGERATING APPARATUS. William W. Watt, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application March 5, 1936. Serial No. 67,409. 1 Claim. (Cl. 230-221)

2,081,043. HEAT EXCHANGER. Hans Kuhn, Basel, Switzerland, assignor to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude, Paris, France. Application March 10, 1934. Serial No. 714,967.

Renewed Oct. 12, 1936. In Great Britain March 13, 1933. 6 Claims. (Cl. 257-229)

2,081,048. REFRIGERATED DISPLAY CABINET. Warwick G. Bates, Newton Falls, Ohio. Application June 18, 1936. Serial No. 85,902. 8 Claims. (Cl. 62-89.5)

2,081,105. AIR CIRCULATING APPARATUS. Frank C. Reynolds, New York, and Walter H. Kirchheim, Mount Vernon, N. Y., assignors to American Radiator Co., New York, N. Y. Application Oct. 2, 1935. Serial No. 43,206. 2 Claims. (Cl. 98-94)

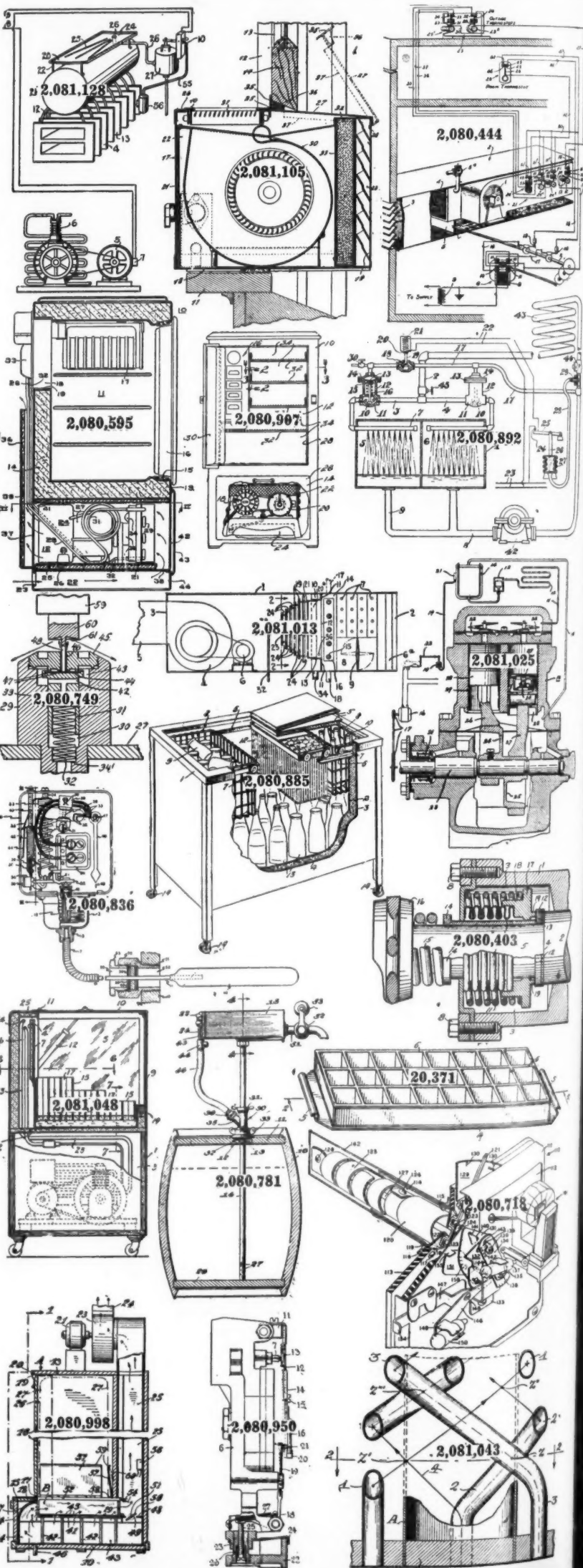
2,081,128. AUTOMATIC DEFROSTER AND MOISTURE CONTROL FOR MECHANICAL REFRIGERATORS. Alexander S. Volpin, Houston, Tex. Application Sept. 26, 1932. Serial No. 634,825. 4 Claims. (Cl. 62-4)

REISSUES

20,371. ICE TRAY. Frank J. Leyfer, Lafayette, Colo., assignor to A. Yates Dowell, Original No. 1,935,405, dated Nov. 14, 1933. Serial No. 630,640, Aug. 27, 1932. Application for reissue Nov. 13, 1935. Serial No. 49,646. 10 Claims. (Cl. 62-108.5)

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.



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RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column. REPLY to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

TERRITORY SALES REPRESENTATIVES—Only men with good records and experience in establishing distributors and organizing territories will be considered. Full particulars regarding education, age, experience, territory previously traveled, and references must accompany first letter. Unusual opportunity for the right men. State salary expected. Confidential. CURTIS REFRIGERATING MACHINE CO., 1938 Kienlen Ave., St. Louis, Mo.

THREE POSITIONS AVAILABLE. Will consider experienced commercial refrigeration salesmen—Duluth, central Wisconsin, Milwaukee—\$200 salary plus bonus. Excellent opportunity for men who can engineer and sell a complete commercial line. Write giving references and complete details as to experience and qualifications to Box 933, Air Conditioning and Refrigeration News.

OLD NATIONALLY KNOWN manufacturer expanding business has opening for two advanced draftsman, one with engineering background and another with practical training. Work involves general design of domestic and commercial compressors of various types. Want men with determination to grow with the company and be in line for advancement in immediate future. Our employees know of this advertisement. Address Box 940, Air Conditioning and Refrigeration News.

BOOKKEEPER, OFFICE MANAGER, thoroughly experienced refrigeration sales and service, domestic (household) rebuilt, and new refrigerators. Good opportunity for right party having necessary experience in New York City area. Write, stating experience and qualifications. AUDUBON REFRIGERATOR CO., 2130 Amsterdam Ave., New York City.

WANTED—REFRIGERATION Engineer with sales experience. A leading Middle Western manufacturer of commercial refrigerators requires a man with thorough knowledge of modern commercial installations. Good salary. Unusual opportunity for advancement. Some traveling and development work on new products. Pleasing personality. Give age, experience, and other particulars in letter which will be kept confidential. No references required until after personal interview. Our own men know of this ad so do not hesitate to write. Include photo or snapshot if possible. Box 944, Air Conditioning and Refrigeration News.

FRANCHISES WANTED

ESTABLISHED MANUFACTURERS representative calling on the refrigeration supply jobbers in following territory: New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina. Can handle one or two additional lines on a commission basis. Box 932, Air Conditioning and Refrigeration News.

FRANCHISES AVAILABLE

COUNTY DISTRIBUTORS for Illinois for outstanding air conditioning and stoker line. Must have one thousand dollars to invest in merchandise in return for exclusive distribution in territory allotted. Few counties still open. Write at once. POST OFFICE BOX 65, La Grange, Ill.

BUSINESS OPPORTUNITY

FOR SALE—Refrigerator service business in fast growing Long Island community. Built up on reputation established 5 years. \$2300 yearly business can be doubled. Fine light basement shop. Supplies and equipment. Low rent. Sacrifice on account illness. \$600 for quick sale. Box 936, Air Conditioning and Refrigeration News.

EQUIPMENT WANTED

WANTED—Electrolux repossessions or close-out stocks. State models, condition, and cash price wanted. Box 931, Air Conditioning and Refrigeration News.

EQUIPMENT FOR SALE

ATTENTION service men, dairies, and refrigeration dealers. I have the following equipment for sale. Coils: 59 T.F. at \$15.00; 110 T.F. at \$30.00; 112 T.F. at \$10.00; 117 T.F. at \$12.00. These are just some of the household coils. They are all new Frigidaire. Also a lot of commercial coils. State type you wish and we will try to fill for you and give price if desired. Also have some Model Y compressors completely reoperated like new—\$60.00. Have some Models C.N. and also smaller compressors. Prices on request. Frigidaire, Wagner, and Century 1/4 H.P. 110-220 60 cycle motors fully rebuilt, while they last \$5.00 each. All orders must be accompanied with small deposit. Balance Sight Draft. Goods will be shipped freight charges collect. No charge for crating. REFRIGERATION SURPLUS JOBBERS, 5622 Woodland Ave., Cleveland, Ohio.

REPAIR SERVICE

MAJESTIC AND GRIGSBY-GRUNOW refrigerator and radio parts service. We have purchased all of the original Grigsby-Grunow Majestic refrigerator and radio parts service. We are the only original, the only genuine, the only direct factory parts and service anywhere in the world. Beware of inferior replacements and parts. Everything we sell is factory guaranteed.

Send for prices and dealerships. G & G GENUINE MAJESTIC REFRIGERATOR & RADIO PARTS SERVICE, 5801 W. Dickens Ave., Chicago.

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows, Hallectric can repair it. Service prompt, prices right, guarantee reliable. HALLECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

COLD CONTROLS repaired. Ranco Pencil types \$1.75. General Electric, Cutler Hammer, Tag, Penn, and Ranco box types \$2.00. Bishop Babcock, Majestic, Frigidaire, and Penn magnetic switches \$2.50. All work guaranteed 6 months. UNITED GAUGE AND INSTRUMENT CO., 436 W. 57th St., New York City.

QUESTIONS

Psychrometric Table

No. 3070 (Manufacturer, Belgium)—"In your Sept. 30, 1936 issue, page 10, you announced the publication of a psychrometric table of the Utilities Engineering Institute.

Would you be willing to give us the address of the Utilities Engineering Institute, and if possible, tell us the price of this table?"

Answer: Address of the Utilities Engineering Institute is 404 North Wells St., Chicago, Ill.

Coin Meters

No. 3071 (Dealer, Ohio)—"Can you tell us where we may secure a low-price yet reliable coin meter for use with electric refrigerators? Something suitable for display case installations. Thank you for your help."

Answer: See below.

No. 3072 (Manufacturer, Iowa)—"I am in the market for a quarter meter—the type commonly used on refrigerators and would appreciate the names of manufacturers of such meters."

Answer: The following are manufacturers of coin meters: Bugetklok Co., 915 S. Washington St., Minneapolis, Minn. Coin-A-Day, Inc., Schofield Bldg., Cleveland, Ohio. International Register Co., 15 South Throop St., Chicago, Ill. Welcome Meter Co., 614 Western Pacific Bldg., Los Angeles.

Float Assemblies

No. 3073 (Serviceman, California)—"manufacturers of refrigerator unit floats? We have used Imperial floats and Mullens floats which is all they list in the regular replacement parts catalogs. For our work they are too bulky and unsatisfactory plus being the vertical type."

"We are looking for a very small size sure work float, on the order of General Electric and Majestic, but we want to purchase these through a replacement parts manufacturer."

Answer: Following are manufacturers of floats and float assemblies: Bridgeport Brass Co., 778 E. Main St., Bridgeport, Conn. American Injector Co., 1481 14th St., Detroit, Mich. Fedders Mfg. Co., 57 Tonawanda St., Buffalo, N. Y. Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa. Mueller Brass Co., Port Huron, Mich.

Kling-Tite Staplers

No. 3074 (Distributor, Illinois)—"Please advise address, if you know same, of the manufacturer of Kling-Tite staplers."

Answer: Try the United States Indestructible Gasket Co., 827 E. 15th St., Brooklyn, N. Y.

Sales by States

No. 3075 (Ice Association, Kentucky)—"Could you possibly send me a comparison list by states showing the increase or decrease in the sales of mechanical refrigerators for 1936 over 1935."

"Last year you published the figures in your paper as outlined above and I would be very thankful to you if you have the information available and will send same to me."

Answer: Household refrigerator sales figures by states for the year 1935 were published in the March 25, 1936 issue of the News, and for 1936 in the March 24, 1937 issue.

Wire Baskets

No. 3076 (Distributor, Illinois)—"Kindly send us the name of manufacturers of utility or wire baskets for electric refrigerators."

Answer: The following are manufacturers of wire baskets:

Collis Co., Clinton, Iowa
Peerless Wire Goods Co., Inc., Lafayette, Ind.

Union Steel Products Co., Albion, Mich.
United Steel & Wire Co., Battle Creek, Mich.
L. A. Young Spring & Wire Corp., 9200 Russell St., Detroit, Mich.

Polarator Refrigerator?

No. 3077 (Advertising Agency, Ohio)—"Would you be able to tell me if there is or was a refrigerator with the name Polarator. Or if the name is familiar to you in connection with any refrigerating device."

Answer: So far as we know, the name Polarator has never been used in connection with a refrigerator or refrigerating device. We have record of Polaris and Polar Aire refrigerators.

Stainless Steel Trays

No. 3078 (Association, Texas)—"We will appreciate you telling us the manufacturers of stainless steel freezing trays for mechanical refrigerators, as one of our members desires this information."

Answer: Contact the following manufacturers:

Inland Mfg. Co., 15 Coleman Ave., Dayton, Ohio
Hoosier Lamp & Stamping Corp., 1511 Read St., Evansville, Ind.
Hunter Pressed Steel Co., Pierce & Linden, Landsdale, Pa.
Fedders Mfg. Co., 57 Tonawanda St., Buffalo, N. Y.
Crowe Name Plate & Mfg. Co., 1749 Grace St., Chicago, Ill.

Beverage Cooler Data

No. 3079 (Distributor, Iowa)—"We are anxious to get the complete detailed specifications on beverage coolers. Please advise us which one of your magazines covers this. I do not see any book listed for the 1937 specifications in which we could get this information."

"We are interested in the specifications, prices, etc., not in the service angle. Please advise us which book would give us this information."

Answer: The most recent information that we have giving specifications on beverage coolers was published in the May 6, 1936 issue of the News. In this issue were given specifications of self-contained bottled beverage coolers.

Delivery Pads

No. 3080 (Dealer, Maryland)—"As a subscriber of yours, we are taking the liberty of asking you to advise us where and how we can secure the covering, a quilted-like blanket, water-proofed together with the straps, as used in delivering refrigerators."

Answer: Bearse Mfg. Co., Chicago, Ill. manufactures pads; International Engineering Co., Dayton, Ohio and the American Steel Scraper Co., Sidney, Ohio make two wheel trucks, padded and fitted with straps for carrying refrigerators.

Hoffberger Consolidates With Bohn in Baltimore

BALTIMORE—All of the activities of the Hoffberger Co. relative to the manufacture of ice refrigerators have been consolidated with the Bohn Refrigerator Co. of this city, it has been announced by George B. Nelson, general manager for Bohn.

The Bohn Refrigerator Co. formerly was located in St. Paul, Minn.

Varick Sponsors Universal Display in Manchester

MANCHESTER, N. H.—John B. Varick Co., local department store, is sponsoring a display of Universal household electrical appliances in the show windows of the former Floyd store.

Refrigerators, ranges, washers, and ironers are included in the display.

THE BUYER'S GUIDE



PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively finished cabinets.

Complete line of different Models and Capacities.

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with these handsome, inexpensive, compact coolers...selected by such nationally known organizations as American Optical, Kemington Rand, Sweet Orr Overall, General Foods, Tidewater Oil and others. Full information on request.

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INSURES RAPID HEAT TRANSFER

You'll marvel at the "slick" motion of the refrigerant in Manufacturers Fin Coils equipped with THERMO FIN In Tube—the patented improvement. It swirls up one wall and down the other like a bobsled on an Olympic course increasing the effective surface of the fin coil. It really is a "slick" idea, you'll readily agree.

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YOU TAKE NO CHANCES when you use this charging line

NEW, stronger, specially reinforced charging lines that protect against leakage and breakage and offer a new high standard of safety. Made with seamless bronze corrugated core which completely prevents gas from coming into contact with the covering. Oilproof textile braiding outside. Bronze couplings are soldered to the

bronze core, making an integral joint. Special spring-wire reinforcing at ends prevents excessive bending at points subjected to greatest strain. Lines are furnished with swivel end connections or with copper tubing extensions.

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WRITE FOR CATALOG 77E covering all Imperial Refrigeration specialties for service work.
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Sixty-four pages of tabulated specifications and convenience features included in 34 makes of 1937 models of household refrigerators. Attractively bound in a buff and orange leatherette cover. This handy pocket-size book contains up-to-date information which will help you sell right now. Just off the press, available for immediate shipment. Price

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